VOL. 160 — NO. 3

JANUARY 21, 1961

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

This photo has caught the fervor and enthusiasm of Democrats at one of party's 1960 campaign rallies as banner-waving crowd mills around press table, hoping for glimpse of candidate. Behind scenes, unsung, were many who were poured by General Telephone Co. of California into giant communications job to speed the flow of dramatic news. See story, page 30.

Circulation This Issue
14,119, of Which
13,556 Is Paid

MANAGEMENT · PLANT · TRAFFIC · COMMERCIAL · LEGAL · ACCOUNTING

Save on construction costs with the new '61 FORD TRUCKS

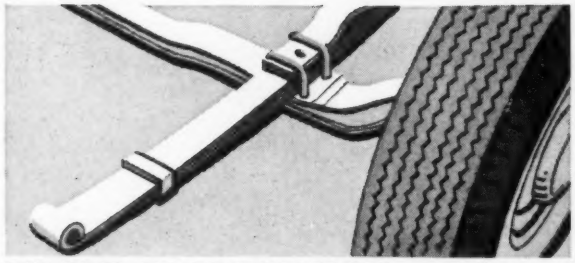
SAVE FROM $52 TO $221 ON PRICE* ALONE WITH FORD'S ECONOLINE PICKUP

Profit-conscious contractors are finding it's good business to do business with the new Ford Econoline Pickup. It's America's lowest-priced* pickup—bar none! Priced from $52 to $221 below other cab-forward economy pickups. But that's just the beginning! You get lively performance and proven gas economy with the popular Falcon Six. This modern engine goes 4,000 miles between oil changes, and has an aluminized muffler which lasts up to three times as long as ordinary mufflers.

And you can save more because Ford's functional design has pared away 1,000 pounds of dead weight, yet you still get the payload capacity of standard ½-tonners. The big 7-foot box provides a whopping 73 cubic feet of loadspace . . . that's up to 23% more than conventional 6½-foot pickups. A full 49-inch tailgate opening means you can load items like standard sheets of 4′ by 8′ plywood. And the full-length *flat* floor permits bulky or heavy loads to be positioned easily by sliding them anywhere in the pickup box.

And you can save on maintenance expense, too. The large engine cover can be lifted quickly, exposing the entire engine for rapid service. Spark plugs, distributor, etc., are conveniently located to speed engine tune-ups. And many major repairs can be made without ever removing the engine. One-piece cab-and-body construction provides increased rigidity and eliminates a major source of rust. In addition, all main underbody structural members are heavily zinc-coated to resist rust and corrosion.

**Based on a comparison of latest available manufacturers' suggested retail delivered prices*



SAVE UP TO $150 ON FRONT TIRES! In certified tests of truck suspensions, Ford front tires lasted up to twice as long. In 50,000 miles savings can add up to $150 on a pickup . . . more on two-tonners. And Ford's sturdy I-Beam front axle and leaf-spring suspension not only cut tire wear, but their simpler design also cuts maintenance costs.

12,000 MILE OR 12 MONTH WARRANTY

SAVE WITH GREATER DURABILITY . . . on all 1961 Ford Trucks, each part, except tires and tubes, is now warranted by your dealer against defects in material and workmanship for 12 months or 12,000 miles, whichever occurs first. The warranty does not apply, of course, to normal maintenance service and to the replacement in normal maintenance of parts such as filters, spark plugs and ignition points. Never before have you had such protection . . . such evidence of long-term economy!

SAVE WITH FORD'S NEW 262-CU. IN. "BIG SIX" ALL-TRUCK ENGINE FOR TOP PERFORMANCE AND ECONOMY

America's lowest-priced* medium-duty tilt-cab models now offer a big 262-cubic-inch Six with the power of big displacement, the gas economy of 6-cylinder design, plus the durability of heavy-duty construction. This engine features a sturdy stress-relieved head and block, strong forged steel crankshaft, long-lasting stellite-faced intake and exhaust valves and durable pyramid-type connecting rods. Positive Crankcase Ventilation reduces oil dilution and sludge formation to extend engine life. Ford's proven 292 V-8 and 292 HD V-8—the V-8's with "six-like" economy—are also available for your special power needs.

The popular Ford Tilt Cab Series outsells all other makes and for good reason! Their compact 82-inch BBC permits longer bodies within a given over-all length . . . for longer loads of lumber and building materials with excellent maneuverability. And set-back front axle design means more weight is carried on the front axle for greater payloads.

You also save with other new features like the stronger radiator with new lock-seam construction, and color-coded printed instrument panel electrical circuits that provide for greater reliability and simplified maintenance. In addition, Ford's parallel ladder-type frame, with standard 34-inch width, allows you to install new or transfer your present special construction bodies quicker and for less.

FORD TRUCKS COST LESS

YOUR FORD DEALER'S "CERTIFIED ECONOMY BOOK" PROVES IT FOR SURE...

FORD DIVISION, *Ford Motor Company*

FLASHES AND PLUGS

JUST A-WEARYIN' . . . Lately, Britishers have been gently twitting the Government Post Office (GPO, which administers the British telephone system) about TIM. She is the voice who, when they ring up, gives them the time of day. But lately, she has seemed a bit under the weather. A dialer reported that when he called one day, her voice was tremulous, and by the end of her message, she sounded almost in tears.

TIM's secret is that her voice was recorded by actress Jane Cain, 25 years ago; and on a glass gramophone disc. Miss Cain was then glowingly described as "the girl with the golden voice."

Inexorable time has sped. Though GPO has talked about a re-recording, nothing has come of the talk. Meantime, faithful, but wearying, TIM continues to give out, and gasp out the time.

•

WATCH YOUR LANGUAGE. A German was asked how they distinguish between an optimist and a pessimist in Germany.

"It's very simple," he replied.

"The optimists are learning English and the pessimists are learning Russian."

•

THEIR DILEMMA: HOW HIGH IS UP? From Illinois Bell Telephone Co.'s *Telebriefs* comes a report that people who design telephone equipment must sometimes wonder if there's such a thing as an average customer.

The company recently heard about a club for tall folks—at least six feet two for the gentlemen, and five feet 10 for the ladies—that was asking for, among other things, taller telephone booths.

Every time the circus comes to town, on the other hand, there's a beef from the midgets who need an assist to reach these same telephones, says Illinois Bell.

•

BITING HAND THAT FEEDS. Fellow traveler at a Communist rally: "Comrade, what happens to my unemployment check when we overthrow the capitalist government?"

•

USES THE CALABOOSE AS EXCUSE. A woman telephoned the Nashville, Tenn. sheriff's office and asked Deputy Ray Cartwright if her husband had been in jail over the weekend.

Deputy Cartwright checked the records and answered that he had not.

Then he heard the woman shout at someone at her end of the line: "You bum, you're lying to me. You've been out with that blonde again."

CHANGE OF ADDRESS

Please notify your local postmaster and the Circulation Department of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

1901 — 60 years — 1961

January 21, 1961

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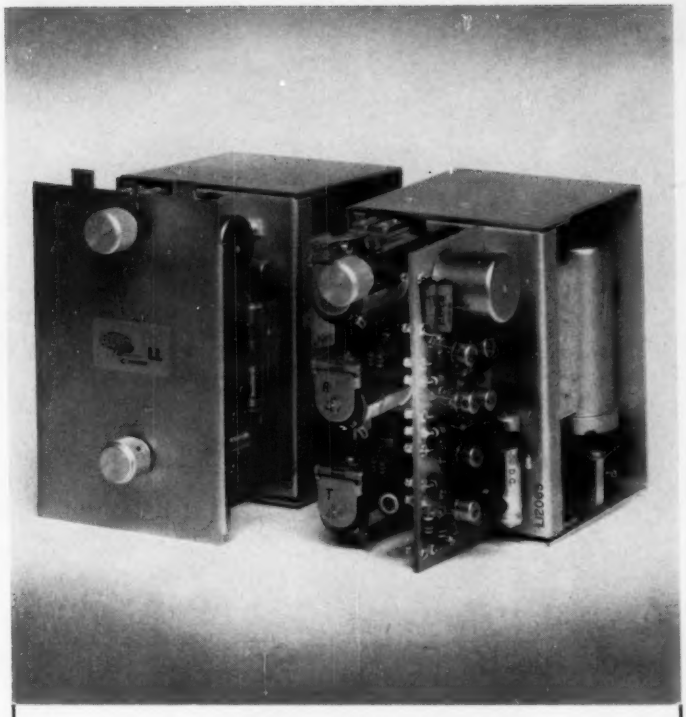

LL Signal Modules

Panhandle's New "LL" Subscriber Equipment

incorporates individual transistorized tone signaling per channel, providing the latest in reliability and flexibility to meet operating company requirements.

The signaling concept provides for code bridged, code divided, frequency bridged, frequency divided, superimposed bridged or divided ringing and instantaneous ringing on revertive call with ring on tip, ring, or both simultaneously.

All relays incorporated in the units are dual contact telephone type for long life and trouble free operation.

The LL 100% transistorized open wire and/or cable system is the outgrowth of 12 years and 12,000 terminals of experience in building subscriber carrier. Simplicity of installation and maintenance has been the design criteria of this new system. Full dc operation with standby power has been designed into the system for full operational reliability.

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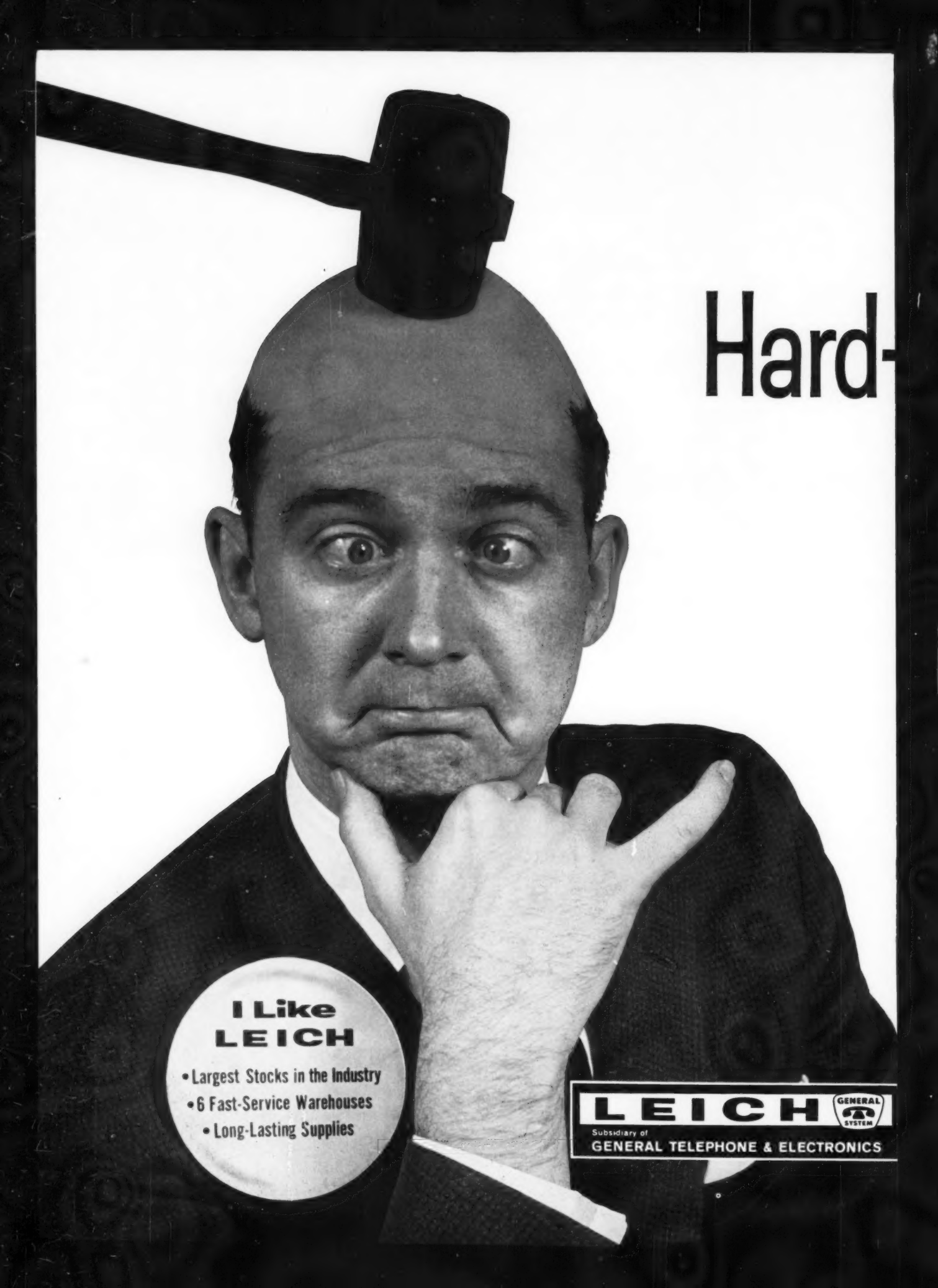
Arlington, Texas

X & LL Systems Marketed Exclusively By

INTERNATIONAL TELETRONICS, INC.

644 Braniff Airways Building **Dallas 35, Texas**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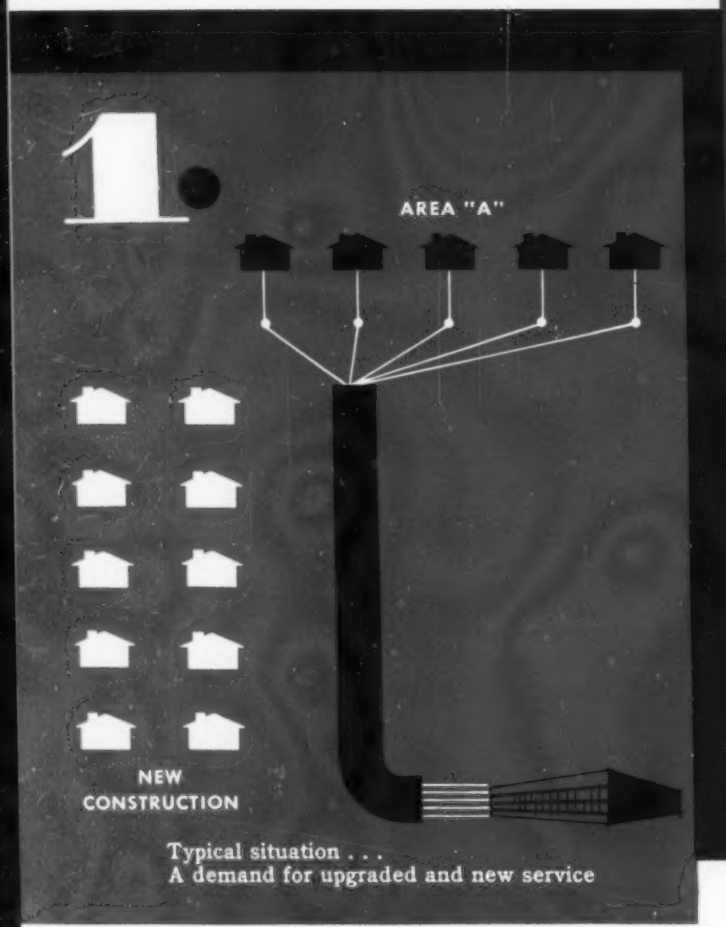
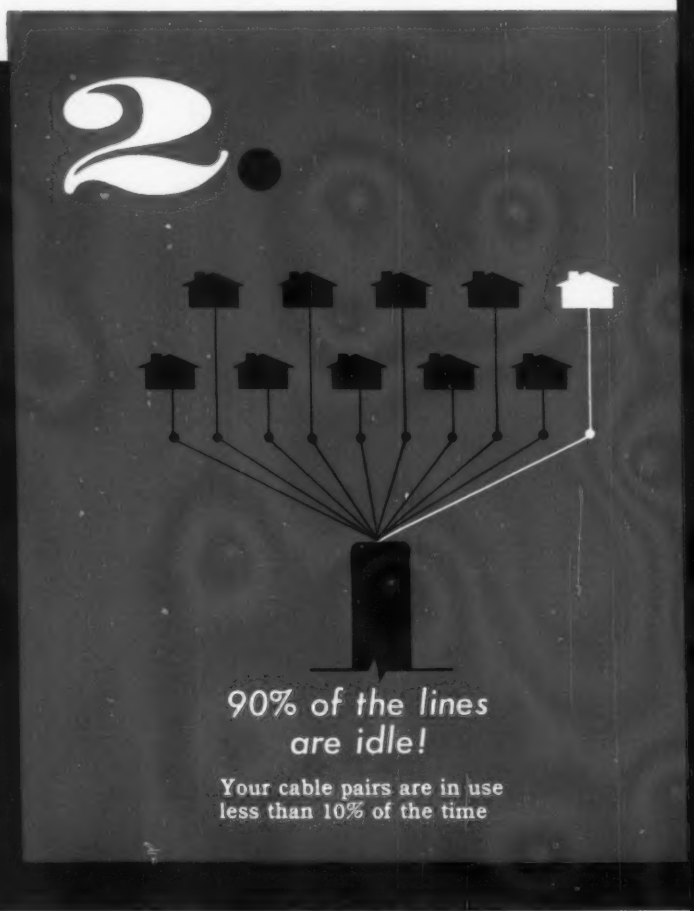
for greater profit...

ITT KELLOGG LINE

● *here's how it works*



Typical situation . . .
A demand for upgraded and new service



90% of the lines are idle!

Your cable pairs are in use less than 10% of the time

● *and it costs less than*

WHERE & WHEN TO USE A KELLOGG LINE CONCENTRATOR. Saves you the expense of installing new lines in a wide range of applications such as new suburban developments, resort areas, military installations, outlying plants, hotels, motels, trailer parks, county fair and other special event areas...The ITT Kellogg Line Concentrator is a low-cost, high-grade, permanent substitute for cable additions.

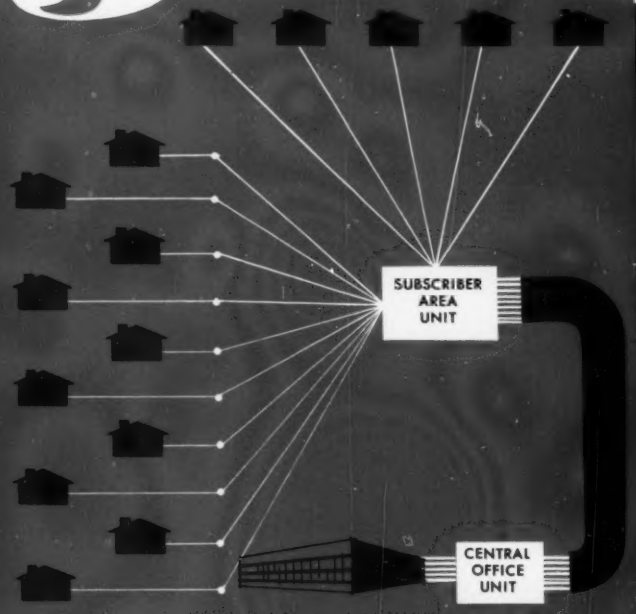
EASILY INSTALLED; ECONOMICAL. These electro-mechanical devices require *no* additional cable, *no* changes or modifications of *any* sort (except jumpering) in either central office or subscriber station equipment...can be installed and put into operation in a matter of days—by your own crew. Rapid amortization of investment. Available (from stock) in 2 basic models. Entire cost: *less* than the cost of a mile of 19 gauge, 26 pair cable!

Concentrator systems, although relatively new in this country, have, for years, been successfully used in Europe. Kellogg, while fully utilizing the great technological advances achieved by European ITT experts in this field, has advanced and adapted concentrator systems to meet the requirements of the operating telephone industry of the United States.

Regional Offices and Warehouses: **CALIFORNIA:** 23 Broderick Road, Burlingame, California, OXford 7-5780. **GEORGIA:** 1594 Southland Circle, N. W., Atlanta 18, Ga., SYcamore 4-2441. **INDIANA:** 802 Knitters Ave., Fort Wayne, Indiana, Eastbrook 4562.

concentrate with the CONCENTRATOR

3.



The concentrator expands total service by sharing cable pairs. 52 lines are derived from 14 cable pairs or even 104 lines from 20 cable pairs.

4.

Kellogg Line Concentrator performs all these operations without degrading service.

1 mile of 19 ga. 26 pair cable!

For complete details and technical information, or an appraisal of your needs, fill in the coupon at right.

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ITT Kellogg
Marketing Dept., 6650 South Cicero Avenue
Chicago 38, Illinois

☐ Please send me further details on your Line Concentrator
☐ Please arrange to have an engineer call to appraise our Concentrator needs

Name_____

Title_____

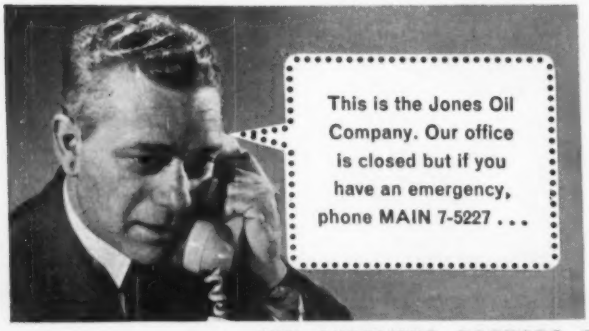
Company_____

Address_____

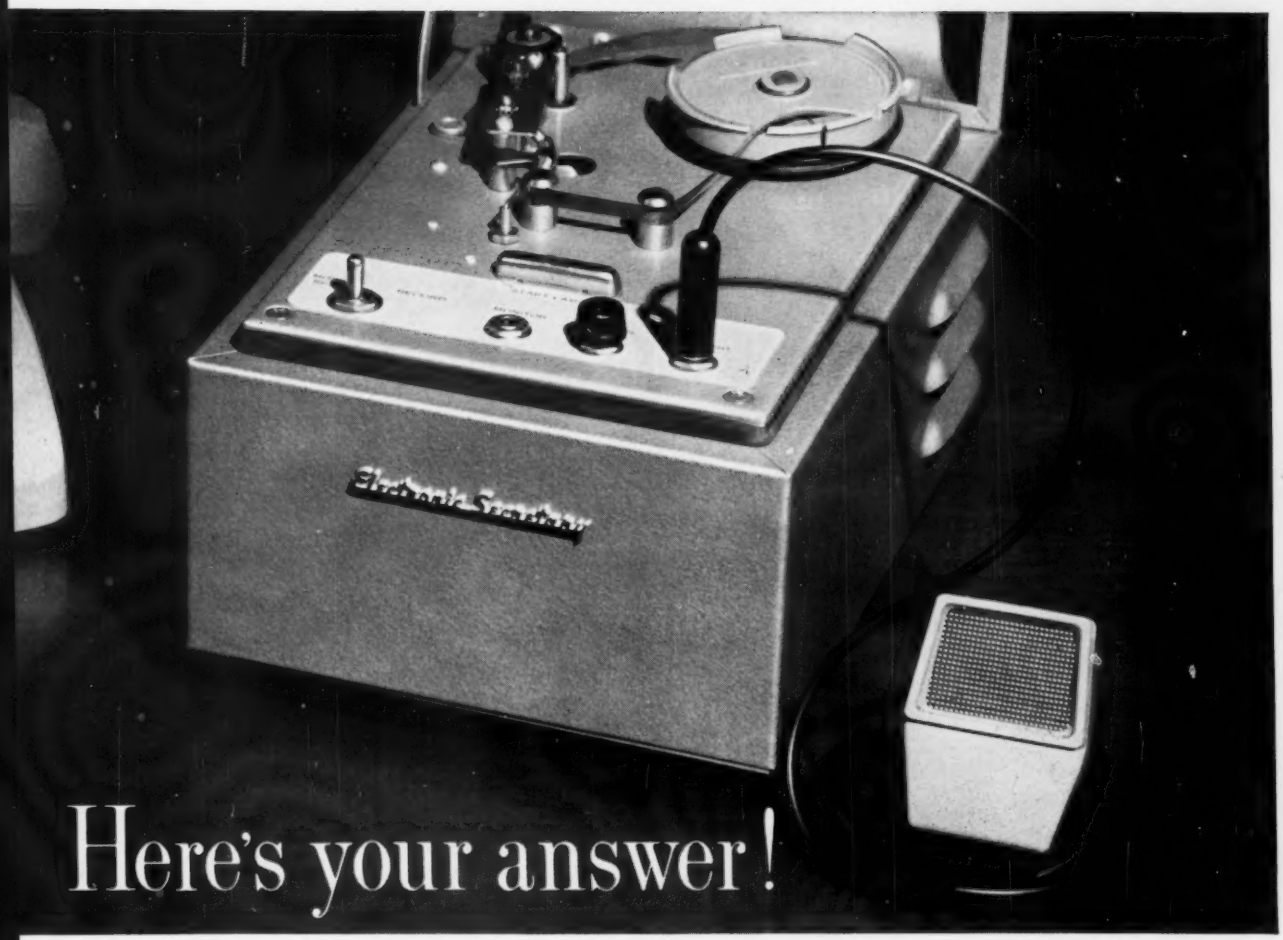
IOWA: 1111 East River Drive, Davenport, Iowa, 324-0441. **KANSAS:** 7th & Sunshine Road, Kansas City 15, Kansas, MAyfair 1-4418.
NEW YORK: 327 North West Street, Syracuse, N. Y., HArrison 2-9251. **TEXAS:** 1359 Motor St., Dallas 7, Texas, Riverside 7-5191.

New profits from old customers?

THEATRES, PERSONAL SERVICES, OFFICES, SUPER MARKETS . . .



FUEL SUPPLIERS, DOCTORS, RADIO STATIONS, RESTAURANTS



Here's your answer!

The AO (Answer Only) model of the ELECTRONIC SECRETARY® phone answering set is a natural for your customers who want to answer calls with an announcement but don't need to take incoming messages.

Check over your customer lists and you'll find prospects galore for ELECTRONIC SECRETARY sets – AO model.

For almost any firm can make profitable use of this great new development that answers calls with a prerecorded (and easily changed) announcement up to 3 minutes long. Some typical examples: stores announcing special sales – businesses giving emergency numbers after hours–sporting goods stores sponsoring the latest scores–churches offering increasingly popular "Dial-a-Devotion" services. Or you name it!

Here's your chance, then, to cash in on the kind of unrestricted profit opportunity you've been looking for. The complete ELECTRONIC SECRETARY line meets every need – also offers LP and SP models that not only answer the phone but take messages. And all models are backed by a big promotional and advertising program.

For the complete story of this new money-making opportunity, call or write either one of the ELECTRONIC SECRETARY distributors below.

Electronic Secretary Industries, Inc., Subsidiary of GENERAL TELEPHONE & ELECTRONICS

GENERAL SYSTEM

Distributed by

AUTOMATIC ELECTRIC SALES CORPORATION
400 North Wolf Road Northlake, Illinois

LEICH SALES CORPORATION
427 West Randolph St. Chicago 6, Illinois

NEW Revenue

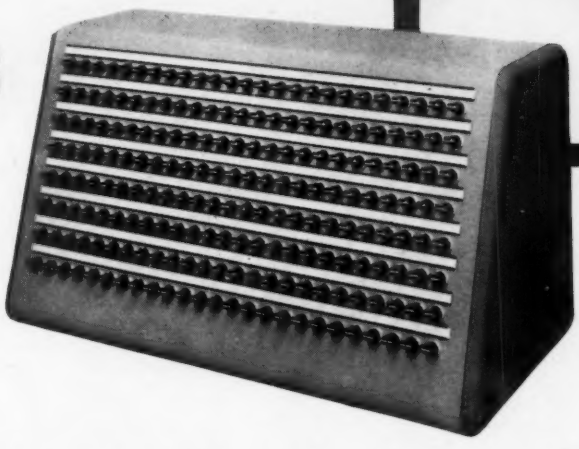
Message-Waiting Service for Hotels

When a guest does not answer his phone, the attendant takes the message and operates key on Message-Waiting Service cabinet.

Flashing light is activated on the P-A-B-X or P-B-X extension. When the guest returns, the light signals him to call the attendant for a message. The service does not interfere with normal telephone operation.

Builder!

and Motels



Here's a new convenience for your hotel and motel subscribers to offer their guests. It's called Message-Waiting Service—another auxiliary feature for P-A-B-X and P-B-X systems.

With Message-Waiting Service, a hotel or motel guest receives phone messages the instant he returns to his room. Here's how the service works: all calls are answered by the P-A-B-X or P-B-X attendant, who rings the guest's phone. If there is no answer, the attendant takes the message and operates a key on the cabinet. This activates a light on the guest's phone. When the guest returns, the light is a signal to call the attendant for a message.

Message-Waiting Service includes an attendant cabinet, plus special Type 80 phones with built-in lamps. The cabinet is equipped with 60 keys (expandable to 100), or 140 keys (expandable to 200). Control equipment is separate and wires easily into switching equipment.

Your hotel and motel subscribers will welcome this new convenience. More conveniences mean more repeat business. And keep in mind that Message-Waiting Service is an auxiliary feature which helps you *sell* P-A-B-X and P-B-X systems.

AUTOMATIC ELECTRIC

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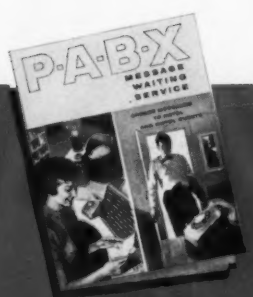
GENERAL TELEPHONE & ELECTRONICS

GENERAL SYSTEM

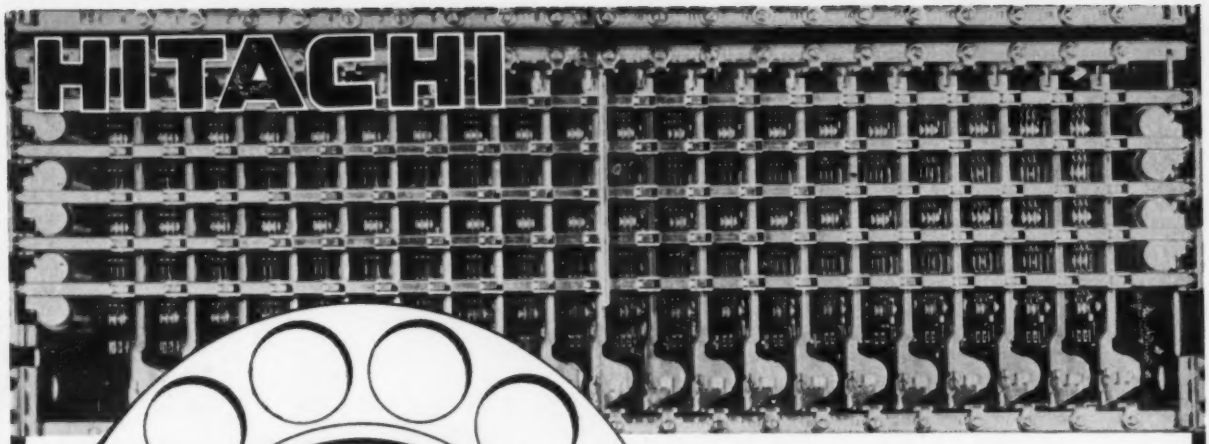


FREE

Sales Aid!

This four-page folder helps you promote Message-Waiting Service. Directed to the hotel or motel man. Tells him exactly how the system works and how he benefits from it. Helps you make the sale! Let us know how many copies you'll need. Write Automatic Electric Sales Corporation, Northlake, Illinois.

HITACHI



For communication systems, call Hitachi

- Telephones and Switchboards
- Carrier-Current Communication Equipment
- Radio and Television Broadcasting Equipment
- Parts for Communication Equipment
- Analog and Digital Computers

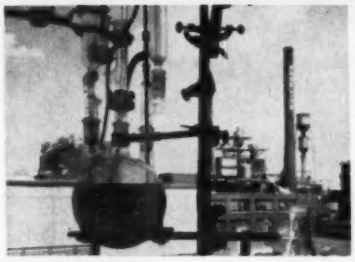
Electric Wire and Cable

Extensive Hitachi experience with communications systems is reflected in the handsome Type HA-6 telephone set. Its light, compact and sturdy body is tough enough to withstand the shock of being accidentally dropped to the floor. Other outstanding features include high-fidelity transmission and reception, dust-proofed ratchet for ever-smooth dialling action, and clear and commanding bell-tone.

Today's telephone communications authorities are now employing the Crossbar System Automatic Telephone Switchboards in addition to the time-proven "step-by-step" Strowger System. They are finding that the Crossbar System offers many advanced facilities, fewer maintenance problems, minimized failures and longer service life, and that these features are making it ideal for unattended operations. Hitachi has devoted particular attention to the development of the Crossbar System, and consignees continue to report gratifying operating results.

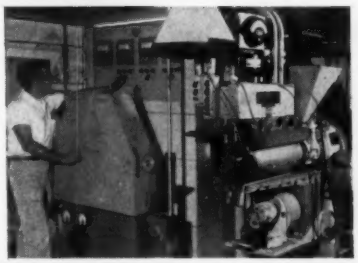
Hitachi, Ltd.
Tokyo Japan

Cable Address: "HITACHY" TOKYO

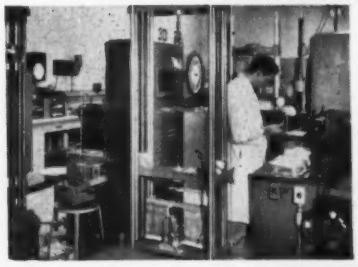


Formulation of New Materials

Production of Experimental Quantities



Study of Extrusion Characteristics and Techniques



Evaluation of Physical and Electrical Properties

Proven Products—Ready to Serve You

Unsurpassed facilities for Plastics Research and Development

LEAD TO UNSURPASSED TELEPHONE CABLE PERFORMANCE

Pictured are the buildings of Union Carbide Plastics Company's modern Research and Development Center at Bound Brook, N. J. Here are found unexcelled facilities for the development and evaluation of the newest and widest variety of polyethylene and vinyl insulating and jacketing materials for telephone cable applications.

Take a look at just a few of the activities carried on at this Center to help fulfill telephony's present and future needs. These range from the formulation and careful testing of the newest materials with improved mechanical and electrical properties . . . to the study of modern extrusion methods so vital to the production of superior products. Your future requirements are anticipated by long-range development programs that seek to broaden the range of properties to meet telephony's future requirements. Better products and better service on our part . . . lead to the kind of trouble-free telephone cable installation and service that can save you time and money.

Telephone companies, contractors and engineers, and cable manufacturers . . . all can gain immeasurably from the unsurpassed experience and technical knowledge of one of the oldest and most progressive producers of polyethylene and vinyl for insulation and jacketing. For more information about BAKELITE Brand plastics, write Dept. IU-139A, Union Carbide Plastics Company, Division of Union Carbide Corporation, 270 Park Ave., N. Y. 17, N. Y. *In Canada:* Union Carbide Canada Limited, Toronto 12.

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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR
AND EDITOR, PUBLIC UTILITIES FORTNIGHTLY

FCC approves WATS to go into effect Jan. 15, but institutes investigation into lawfulness of regulations and charges proposed by AT&T. . . . Action on USITA and General petitions raising issues of division of revenues derived from WATS held in abeyance pending action in instant investigation.

THE FEDERAL Communications Commission found a way to let Wide Area Telephone Service (WATS) go into effect on the deadline date provided in the tariffs filed by the American Telephone & Telegraph Co. There still remain unresolved differences of opinion about the effect of this admittedly forward step in toll service on Independent telephone companies. These differences, which led to a filing by the United States Independent Telephone Association and the General Telephone System of petitions with the FCC for the suspension of the WATS tariffs, have been previously covered in this department.

In an order, handed down on Jan. 13, the commission, on its own motion, instituted an investigation into the lawfulness of regulations and charges proposed by the AT&T for interstate flat-rate long distance telephone service, but is permitting the covering tariff schedules filed by that company to become effective Jan. 15.

The tariff provides for a new long distance telephone service called WATS which will make available to customers having large volumes of telephone communications, limited (measured time) and unlimited (full time) interstate calling within specified areas at flat monthly rates. The hearing will be held at a time to be later specified, and the examiner was ordered to certify the record to the commission for decision without preparing either an initial decision or a recommended decision.

While the FCC denied requests by the USITA and by 24 telephone operating companies of the General Telephone System to suspend the tariffs, it practically assured them that their grievance would be carefully considered at a later date. Action on petitions of USITA and General, raising issues of division of revenues to be derived from WATS between Bell System companies and Independent companies, will be held in abeyance pending action in the instant investigation.

It was a 4-to-3 decision. Chairman Ford concurred in part and dissented in part and issued a statement, in which Commissioners Hyde and Bartley joined. Chairman Ford's dissent is particularly interesting for the Independents. He said:

"I concur in the action taken by the commission except insofar as the order adopted herein fails to provide that pending hearing and decision upon the tariffs under investigation, the operation of such tariffs be suspended for the statutory period of three months from the date of Jan. 15, 1961, the date upon which those tariffs are scheduled to become effective, pursuant to the statutory procedures set forth in Sections 204 of the Communications Act of 1934, as amended.

"The proposed new tariff represents a substantial change in the offering and pricing of interstate long distance message telephone service. More important, however, the proposed tariff schedules present for ultimate determination a number of novel but basic questions going to the lawfulness of the tariff under Sections 201(b) and 202(a) of the Act.

"Section 201(b) requires that all charges, classifications, regulations and practices for and in connection with interstate communication services shall be just and reasonable.

"Section 202(c) prohibits unjust and unreasonable discriminations and undue and unreasonable preferences.

"Recognizing the existence of these substantial questions of lawfulness, the majority of the commission has voted to investigate the proposed tariff. These same questions, in my opinion, warrant, if not require, the Commission to take whatever measures have been made available by the Communications Act to prevent the new tariff from becoming effective until it has had an opportunity to resolve such questions by the investigation which has been provided for."

Dial "H" for Heartburn

With the inauguration of so many new and varied telephone services, and special services using the conventional telephone as a control, there must be arising a question in a good many minds about where real telephone service ends and the frills and do-dads commence. Regular readers of the impish "*New Yorker*" (Dec. 3 issue) were treated to an amusing satire on this subject by the inimatable humorist S. J. Perelman.

Taking a recent publicity story about telephone controls for Westinghouse appliances as his point of departure, Perelman weaves a fantastic story about a jealous wife who drives her rival to the verge of insanity by dialing all sorts of chaotic "orders" to a love nest superlatively equipped with domestic appliances. This love nest is one of those Sunday supplement setups where the oven can be turned on or off, the laundry started, the cat put out or the dog let in, by simply dialing a code from way across town, or clear across

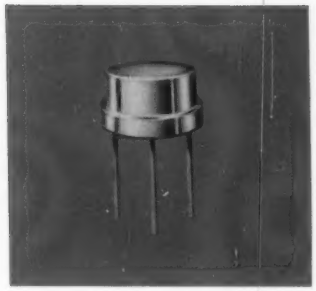
(Continued on page 22)

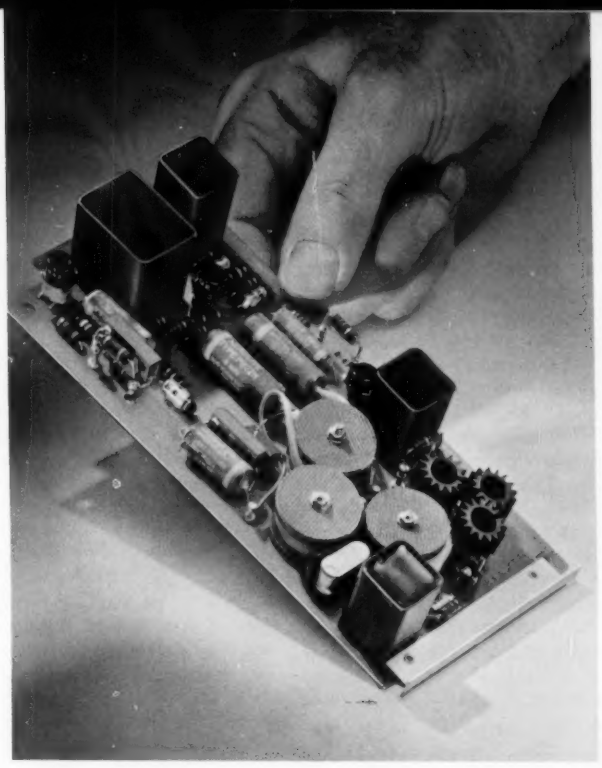
tried and true plus something new

Proved in use: with well over 1,000 channels in operation, Stromberg-Carlson Subscriber and Trunk Carrier Systems are thoroughly proved-in by the most rugged test of all . . . actual service in the field in operating companies from coast to coast since 1956.

The 561 Subscriber Carrier System is your best buy for low-cost rural expansion of subscriber service.

The 565 Trunk Carrier System is your top choice for economical short-haul toll service between central offices.





Look at the Advantages

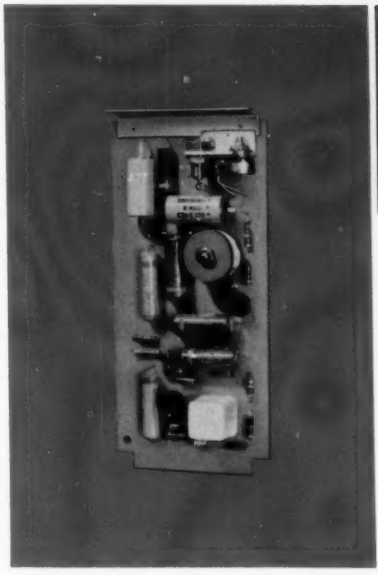
Supreme flexibility: all units are of the plug-in type. And you can add and remove channels in any order. No need to rearrange or disturb other channels working on the same line.

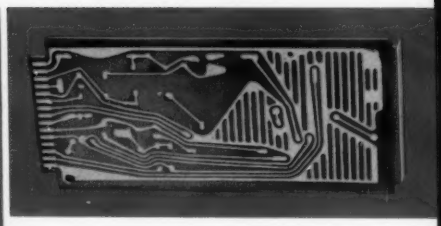
Reduced inventory: all circuit cards are interchangeable between channels in either the 561 or the 565 system. Most circuit cards (7 out of 9) are interchangeable *between* systems. Your inventory can be kept at a bare minimum!

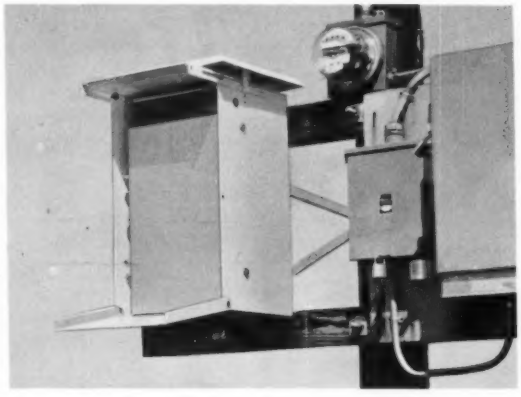
Easy conversion: if you already have our 5-channel systems, addition of channels 6, 7 and 8 is easily done. No increase in common equipment!

Low cost: channels 6, 7 and 8 are yours at the same moderate per-channel price as the first 5 channels.

Want more facts? Like to know about delivery dates? In Atlanta call TRinity 5-7467; Chicago: STate 2-4235; Kansas City: HArrison 1-6618; Rochester: HUbbard 2-2200; San Francisco: OXford 7-3630.

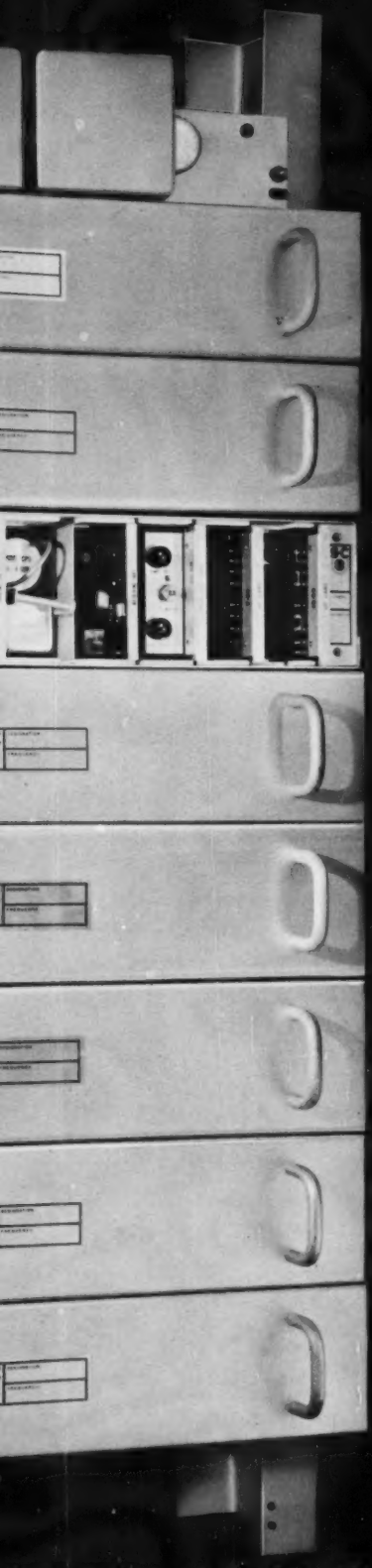






STROMBERG-CARLSON
A DIVISION OF **GENERAL DYNAMICS**

Now: 8-channel Transist
Carrier; 565 Trunk Carrie



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rier by Stromberg-Carlson

Proved in use: with well over 1,000 channels in operation, Stromberg-Carlson Subscriber and Trunk Carrier Systems are thoroughly proved-in by the most rugged test of all . . . actual service in the field in operating companies from coast to coast since 1956.

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the nation, for that matter. The punch line is that the wife comes across the errant husband's telephone code book and decides to make the "other woman" dance, and how.

Well, all fun aside, there may be some room for serious thought, which might more properly belong in Ray Blain's department of this magazine, on the question of who is looking out for what the consuming public really wants, needs, or is willing to pay for, as compared with what some mad inventor thinks the public should have. Doubtless many marvelous and many trivial things can be accomplished via the telephone, and are accomplished in fact. But isn't there room for some sort of human interest philosopher or consumer interest advocate, somewhere in the telephone industry hierarchy, ready to flash the red light and say to the inventors and promoters, "Keep it clean and simple, boys; don't forget we're primarily in the telephone business."

Probably, there is such a person and he is right in there now, working as hard as he can. Let us hope so. Too fresh in our minds should be the debacle of the American automobile industry which has let in a flood of foreign car imports, simply because the geniuses in the planning department believed each other's "customer acceptance" surveys four or five years ago.

Remember during the days when Detroit was glorifying the automotive dinosaurs with airplane horsepower capacity, foot-high tail fins, and all the other gadgets, including the kitchen sink—all saddled on the cost of the new automobile? Remember how we were solemnly assured that all these changes were wanted — indeed demanded — by the American customer on the basis of scientific opinion surveys? Probably these same experts are now riding around in European "bug" cars with lawn mower engines, trying to save on gas, oil, tires, not to mention a good part of the original cost.

There is a moral in this for every fast-growing dynamic industry. The American public has always been receptive to every new improvement which will actually provide better service and raise its living standards, especially at lower cost commensurate with efficiency. But when the do-dads and the gadgets begin to get in the way of primary utility and common sense supply and demand, the invitation goes out for smart competition to come in and do the necessary job.

The telephone industry itself has never lost sight of its primary obligation to furnish telephone service of ever-improving quality, commensurate with cost, even though it is now moving in the direction of satellites. The trouble in this area, however, may come from other well-intended domestic appliance improvements which could make use of the telephone to do about everything possible except talk over it.

The situation recalls the old Sam Goldwyn story about a hysterical casting director trying to describe a marvelous concert pianist he had hired: "He is a virtuoso!" the director raved. "His technique is full of pyrotechnics. His basso profundo moves you to tears with its sad sonority." "Okay, Okay," broke in Sam impatiently, "So he's a genius. All I want to know is —can the guy play the piano?"

How Soon Communications Satellites?

On Jan. 10, the Bell System disclosed that it was "hopeful" an experimental satellite designed to furnish intercontinental telephone and television channels may be launched "within one year." Frederick R. Kappel, president of American Telephone & Telegraph Co., said in a report to stockholders that development of the satellite and ground stations was under way and application has been made with the FCC for microwave radio frequencies for experimental use.

The U. S. Navy, two days later, plugging for a major space role, disclosed plans to rig a special ship with electronics equipment for global experiments with the forthcoming "Advent" communications satellite system. Advent will be a "stationary" satellite designed to permit instantaneous communications by the military services via both teletype and voice on a worldwide basis. Built for the Army, it will be launched by the Air Force.

It will be put in orbit at an altitude of 22,000 miles above the equator so as to circle earth once in 24 hours and thus give the effect of hovering over a fixed point on earth. The first Advent is expected to be launched in the spring of 1962. Vice Adm. John T. Hayward, Deputy Chief of Naval Operations, said the Navy would withdraw a victory ship from mothballs and cram it with receivers, transmitters, trackers, and other electronic gear so it can roam the world and communicate via the Advent with Army shore stations.

The move was seen as a Navy move to get a foot in the door for its hope of developing an "astronautics ship" which could not only communicate with satellites, but, more importantly, launch them. Hayward said in his statement that the Navy of the future would need navigation, weather, reconnaissance, and communications vehicles in space and was emphasizing "military astronautics systems."

Kennedy Appointments

Last week in this department there was a last-minute notice about President-elect Kennedy's first major regulatory appointment to the Federal Communications Commission. It was noted that Newton N. Minow, the chairman-designate of the FCC, was a law partner of Adlai E. Stevenson. Since then some additional information has come in on Mr. Minow. He will undoubtedly be the youngest chairman ever to head the FCC. Minow is 34. He is a graduate of Northwestern University, and was formerly administrative assistant to Stevenson when the latter was governor of Illinois.

Minow's appointment to the FCC will have a double effect. First of all, it will "bump" Charles H. King, Republican, who has been serving on a recess appointment since last July. Minow's appointment automatically displaces King on the commission. A secondary effect will be Mr. Minow's designation as chairman. This will have the effect of "bumping" the present chairman, Frederick W. Ford, who then steps down to continue as an associate member of the FCC until the expiration of his term on June 30, 1964. Commissioner King's appointment would have expired in June, 1961, so Minow will be subject to reappointment within six months for a full term.

One of the interesting questions which has been raised by the appointment of Minow is just how this squares with the recent report of White House adviser James M. Landis, recommending qualified experts who have had a career, or at least some experience, in the regulatory jobs to which they are appointed. Minow, without question, must be a highly qualified attorney, as well as an administrator. But he has never represented a client before the FCC. He has represented client interests with respect to educational films for television, but his principal background seems to be in administration and politics at the state level.

However, as the Washington *Post*, and some other daily newspapers have pointed out, Mr. Minow may make up in youthful vigor and all-around confidence whatever he may lack by way of background and experience in the particular regulatory field to which he has been assigned. For that we can only wait and see.

The new appointment gives the Democrats a 4-to-3 majority on the FCC, because of Commissioner King's displacement. Minow is quoted as saying that federal agencies "have got to move faster." This may indicate that he expects to do some streamlining on FCC procedures and may also have re-

(Continued on page 51)

Random Thoughts

From a Plant Man's Notebook

By Ray Blain

WITHOUT CHANGE, there can be no progress, even in the telephone business. Change never comes easily, however, and many times is resented by most of us. We, as a majority, are prone to get set in our ways and develop a fear of the unknown. We become accustomed to old methods and often hesitate to take a chance on a new idea that may involve some element of doubt. Even so, at times, we do take a calculated risk and try out new ideas. Many of these new ideas prove to be superior to the old methods and procedures, so we adopt them as standard practices. In so doing, we often reduce costs, save time and improve service. This, then, is progress, of which we all heartily approve.

We do not intend to imply that telephone people are backward or adverse to the adoption of new ideas. The history of the telephone industry proves that it has always been a progressive business. Change without betterment is always expensive and telephone people only want to make certain that the new is a better investment than the old. In view of this philosophy, we present the following tried and proved ideas for your consideration.

Grounding or insulating guys and anchors. Down through the years it has been common practice to place strain insulators in guys to insulate aerial cable from ground. It was the general opinion in the old days that if this cable made accidental contact with power wires, it would cause no harm. Actually, in many cases cable thought to be insulated had high resistance paths to ground, and power contacts caused serious trouble due to slow burns. Furthermore, these high resistance power leaks proved hazardous to linemen.

For the past several years, many engineers have advocated grounding aerial cable so that when an accidental power contact is made with the telephone plant, the protective equipment on the power system will operate instantly. When this system is used, it is mandatory that a good low resistance ground connection be provided for the cable. One type of ground recommended and frequently used is the multi-grounded power neutral. Deep grounding by means of sectional ground rods is recommended when a power ground is not available or for some other reason is not considered desirable.

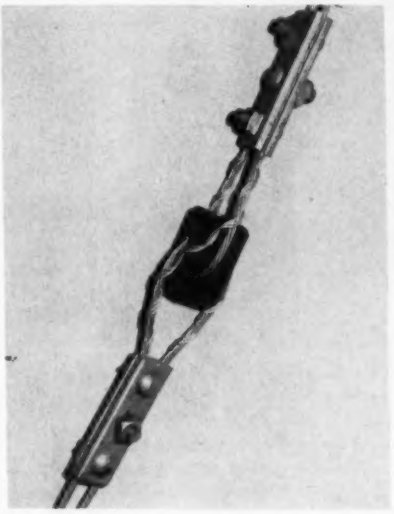

Fig. 2. Preformed guy breaker jumper.

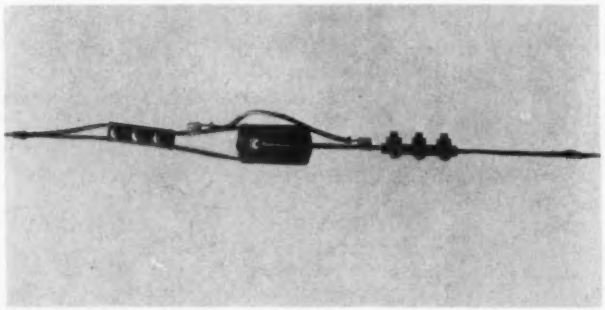

Fig. 1. Jumper connected across insulator by use of clamps.

Fig. 3. Clamp used to bridge anchor rod eye.

When it has been decided to change from an ungrounded to a grounded cable system, it is necessary to jumper across the strain insulators in all guys. This may be accomplished by connecting a jumper wire with two clamps as indicated in *Fig. 1.* Another recommended practice is to make use of a Preformed guy breaker jumper as shown in *Fig. 2.* This method has numerous advantages as the jumper can be installed without disassembling the insulator or guy strand. Moreover, it can be applied by hand effectively, economically, and quickly. This jumper is also designed to have a minimum electrical conductivity equivalent to that of the strand.

In order to take advantage of the anchor as a ground, it is also necessary to bridge the usually high resist-

Fig. 4. Old method of placing poles in sidewalk.

ance ground between the guy strand and the anchor rod. This may be accomplished by the use of a special clamp designed for this purpose, the use of which is indicated in *Fig. 3*. The effectiveness of an anchor as a ground connection will depend on soil conditions in each locality.

Poles in Sidewalks. For many years it has been common practice to set poles along streets in sidewalks and within a few inches of the curb. This proved a rather expensive arrangement as sidewalk repairs were always required each time a pole had to be replaced. In addition, the poles often obstructed a considerable part of the sidewalk and interfered with pedestrian traffic. This method is indicated in *Fig. 4*. We will venture a guess that this method never gained many friends for the telephone or power company.

City planners, telephone engineers, or both, finally got smart and came up with a most satisfactory answer to this problem. They now leave a strip of grass about two feet wide between the curb and sidewalk. This arrangement

Fig. 5. Strip left between sidewalk and curb for space to set poles.

Fig. 7. Guy without guard installed in a parking lot.

provides ample space for setting poles without disturbing the sidewalk or obstructing pedestrian traffic. The appearance of the street is also materially improved and this space is also often

Fig. 6. Sidewalk-type guy used in parking lot.

used to plant small ornamental trees, such as dogwood. This method is shown in *Fig. 5*. City planners and telephone and other engineers always would do well to consider this arrangement when they lay out streets and plan telephone and power facilities in new housing and shopping center developments.

The Sidewalk Guy. Frequently, it is necessary to guy an aerial line where the required space is not available for normal guying. In this case, a sidewalk guy is often used to advantage. *Fig. 6* indicates how this guying method can be used advantageously in a parking lot. In this lot, a stop is provided to prevent cars from obstructing the sidewalk, and this stop also protects the guy. A guy guard is used, however, as a protection for pedestrians passing on the sidewalk.

Fig. 7 shows a similar guying arrangement used in another parking lot where a stop is not used to prevent cars from obstructing the sidewalk or striking the guy. This guy is protected only by a white triangle painted on the pavement. We predict that this guy will soon be damaged by careless drivers parking in a hurry.

Guy guards in exposed areas. It is often necessary to install guys in exposed areas where they are subjected to damage from passing vehicles. Even though the conventional metal guy guards are properly used, they can be bent into grotesque and dangerous shapes when struck by vehicles. An example of this is shown in *Fig. 8*. When guards are bent and extended in such a manner, they are actually a dangerous hazard rather than a protection.

It would appear that the use of a plastic guy guard might prove to be an answer to the problem of guy protection. This type of guard has been in use for some time on a field trial basis and appears to have numerous advantages over the metal variety. They regain their original shape after having been struck by a vehicle and do not develop sharp, dangerous angles. Plastic guards can be furnished in various colors.

It is believed that a plastic guy guard treated with a substance so that it will reflect light at night might prove to be the ultimate answer to the guy protection problem.

Pressurized Cable Sleeves. When cable is maintained under constant pressure, some large lead sleeves may have a tendency to expand or bulge. This can be prevented by reinforcing the sleeve with metal bands especially de-

signed for this purpose. Special zinc-alloy strips are cut to the length required and tightened and held in place by links and bolts. A large lead sleeve reinforced in this manner is shown in *Fig. 9.*

Precast Concrete Manholes. Various attempts have been made down through the years to make use of precast concrete manholes. Perhaps the greatest objection to their general use has been

Fig. 8. Metal guy guard damaged by passing traffic.

weight and difficulty experienced in transporting and placing them in position for connection of the underground conduit. The 4-foot manhole of this type, shown in *Fig. 10,* weighs approximately 13,000 pounds. The winch on a wrecker-type truck is successfully used to handle this weight.

This arrangement will undoubtedly prove economical on certain underground conduit projects; and this is especially true when manholes must be constructed in heavy traffic areas.

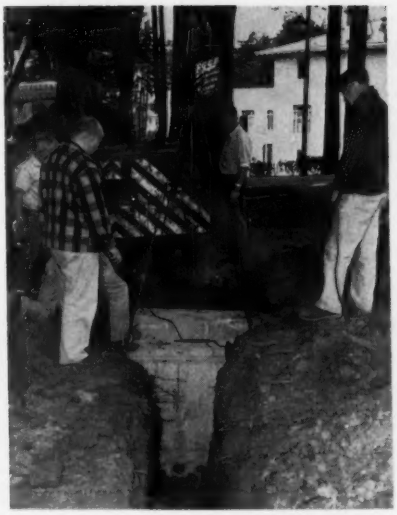

Fig. 10. Precast concrete manhole.

The Ladder Truck. This device has proved its worth in many ways during the past few years in telephone systems everywhere. Not only does it permit certain work to be performed safer and in less time, but it also proves to be a good investment for most telephone companies. Labor saved is usually money saved. *Fig. 11* indicates how the ladder truck may be used to locate and clear trouble on aerial cable.

Alaska Tripod Lines. Back in 1900, Congress authorized the Signal Corps of the U. S. Army to establish, operate and maintain a communications system in Alaska for both the military and civilian population. By 1902, the Signal Corps was operating more than 1,100 miles of telegraph lines in the territory. During this period, Lt. Billy Mitchell, Signal Corps, and later, General Mitchell of Air Force fame, was actively engaged in telegraph line construction in Alaska.

Many of these lines were of the tripod type using porcelain insulators and galvanized steel wire. The tripods consisted of three small lodgepole pine poles tied together at the top and spread at the bottom to form a tripod. These fixtures were set on top of the ground as frost caused poles set by the conventional method to heave out of the ground because of deep freezing.

Fig. 12 shows a section of a pole, insulator, bracket and wire recently removed from one of these old lines. These items are in a perfect state of preservation after nearly 60 years of service in this arctic area. The poles were decayed only slightly where they contacted the ground.

Fig. 11. The ladder truck used in clearing cable trouble.

Outdoor-Type Telephone Booths. These booths obviously are a good investment for all telephone companies. It would appear then that it is desirable to make certain that they are well maintained at all times. Most operating companies are careful always to maintain their trucks in a neat and clean condition.

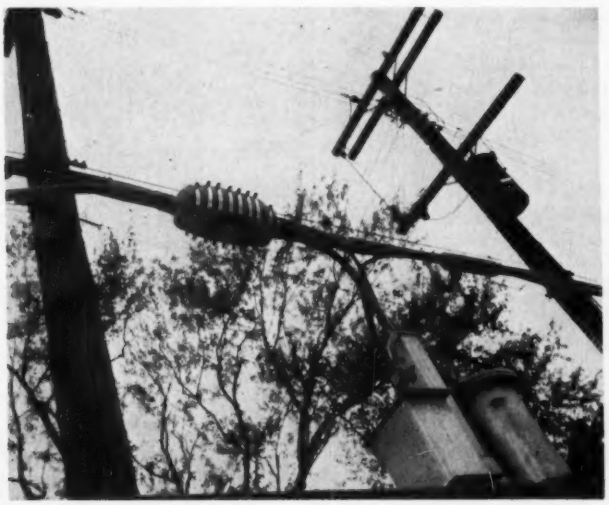

Fig. 9. Lead sleeve reinforced by metal bands.

Fig. 12. Section of pole removed from old Alaska Tripod Line.

Fig. 13. Poorly maintained outdoor-type telephone booth.

Conversely, however, some companies seldom — if ever — clean their outdoor booths. We have observed booths where the glass is dirty and the floor covered with litter all too often. The directory —if one is present—may be tattered and torn, thus cutting down considerably its usefulness.

Would it not prove highly desirable as well as good public relations to conduct a routine inspection and cleaning of all outdoor booths at regular intervals? *Fig. 13* indicates one example of a neglected outdoor-type booth.

Special telephones to meet special needs. There was a time when one telephone installed in the hall was considered to be adequate to serve the average residence. Now, however, as a result of our change in living habits and increased use of the telephone by all members of the family, several extensions are necessary in order to properly provide the service required in the average home. Perhaps the most valued extension in any home is the bedside telephone. Not only is it convenient to answer important night calls, but it is also within convenient reach for emergency use.

The next most important extension is undoubtedly that in the kitchen. The average housewife spends many of her daytime hours in this room and a telephone within easy reach saves many steps. The hanging-handset-type telephone has proved ideal for kitchen use. A good example of an installation of this type is shown in *Fig. 14*.

The "family room," or as sometimes referred-to, the "rumpus room," is another location in the home where an extension telephone serves a most important purpose. These rooms are usually located in the basement and when a noisy party is in progress, a telephone ringing upstairs will never be heard and important calls may be lost. Here, again, the hanging-handset-type telephone is usually considered the most appropriate type. A typical installation is shown in *Fig. 15*.

Patio living has increased in popularity at a tremendous rate during the past few years. The average American family spends much of its time out-of-doors during the summer months and a telephone ringing inside the house now and then will go unanswered. This can be corrected by installing an extension on the patio.

Underground service, a weatherproof outlet with a plug-in telephone, best meets this requirement. A plastic cover or housing now available, protects the telephone if it is forgotten and left outside during a shower. This cover may be locked to prevent unauthorized calls, when desired. A typical installation of this type is shown in *Fig. 16*.

Fig. 14. Kitchen extension telephone.

Now entering the residence telephone picture, and due to increase in popularity, is the "home interphone." This device combines, for the first time, all of the advantages of the telephone with paging throughout the house, door answering, hands-free talking and even automatic "baby sitting."

These features are now all built into versions of the standard home telephones. Each unit in the system is a master station and all functions can be performed from all extensions.

The unit includes a specially designed extension telephone, either the conventional 500-type set, wall telephone or the small Princess type, plus a small, separately-mounted speaker. The telephone case is the conventional type, but the equipment inside includes a tiny microphone.

Fig. 15. The rumpus room telephone.

A total of seven major advantages are claimed for the home communications system which are as follows:

(1) Saves time and steps by providing easy and convenient communication between rooms. Questions such as "who has my pliers," or "Mother, have you seen my hat?", can be asked and answered quickly and easily, without shouting up and down stairs. The family can be awakened, called to meals, or issued special instructions—all at the twist of a button on the home interphone. Even the family dog can be called to meals over the system. That is not necessary in the Blain home, however, as our dog is always ready and on hand at meal time.

(2) The Home Interphone provides the important security function of answering the door from any telephone. This feature is especially important when the womenfolks are alone at night.

(3) Outside calls may be answered from any unit of the system. If the call is for a member of the family other than the one who answers, that member can be called to the telephone over the home interphone, and can take the call at any extension.

Fig. 16. Patio telephone with plastic protective cover.

(4) By placing the crib near any telephone, a mother may check on the baby's sleeping from any other tele-

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Well Planned System Prolongs Battery Life

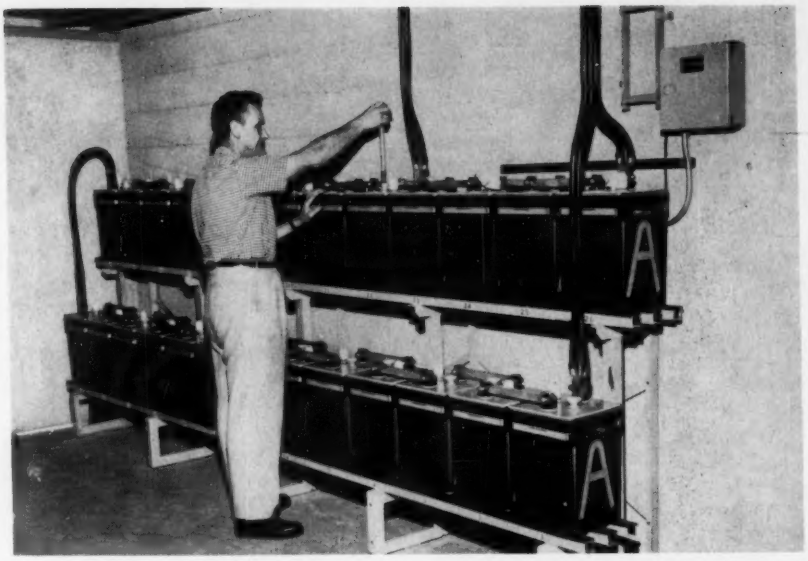

Fig. 2. Cells are checked regularly for specific gravity, voltage, electrolyte level and temperature. Cell numbers 1-23 are in the operating circuit at all times. Cell numbers 24, 25, 26 (end cells) are connected and charged separately.

THE USE of end-cells in storage batteries, multiple rectifier charging and a well-planned system for supplying emergency ac power are characteristic of new central offices installed by General Telephone Co. of Indiana.

General of Indiana has a large investment in storage batteries throughout its 95 exchanges. The company is an operating subsidiary of General Telephone & Electronics Corp. and supplies telephone service in central and northern Indiana.

With a capital investment of $250,000 in batteries, they are selected, charged and maintained carefully. Battery capacity is presently determined on a projected 10-year operating basis.

Each battery must have enough capacity to handle the busy-hour peak loads for two hours at installations with emergency generators, and the busy-hour peak loads for five hours at

Form 156
Rev. 6-60

DAILY READINGS - PILOT CELL

DAY	VOLTS	SP. GR.	TEMP.	DAY	VOLTS	SP. GR.	TEMP.
1				16			
2				17			
3				18			
4				19			
5				20			
6				21			
7				22			
8				23			
9				24			
10				25			
11				26			
12				27			
13				28			
14				29			
15				30			
Pilot Cell No.				31			

MONTHLY READINGS

CELL	SP. GR.	VOLTS	TEMP.	CELL	SP. GR.	VOLTS	TEMP.	CELL	SP. GR.	VOLTS	TEMP.
1				1				1			
2				2				2			
3				3				3			
4				4				4			
5				5				5			
6				6				6			
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GENERAL TELEPHONE COMPANY
OF INDIANA, INC.
QUARTERLY STORAGE BATTERY REPORT

Division _____ Office _____ Period Covered _____

Battery No. _____ Designation _____ Mfgr. _____ Type _____

No. Cells _____ No. End Cells _____ Date New _____

(A) Electrolyte Level _____ Electrolyte Temp. _____

(B) Last Equalizing Charge: Date _____ Length _____ Volts _____

(C) Water Added: Date _____ Quantity _____

(D) Physical Condition: _____ Sediment Depth _____ Color _____

(E) Charger: Make _____ Type _____ Volts _____ Amps _____

(F) Readings Taken on Float _____ Equalizing _____ (Check One)

(G) Remarks:

INSTRUCTIONS

1. Enter Daily: Battery voltage, also specific gravity and temperature of electrolyte for the pilot cell. Read cell voltage accurately to hundredths of a volt.
2. Enter Monthly: Readings for all cells. Enter temperature of electrolyte at time of reading and specific gravity corrected to 77°.
3. The following entries are to be made at the end of each quarter:
   - A. Enter electrolyte level with reference to top line. (Example) If at top line, Note "0". If below top line, note distance below, like "-¼". Enter actual electrolyte temperature.
   - B. Record date, duration and voltage of last equalizing charge.
   - C. Record date of last water addition and quantity of water added.
   - D. Observe and note physical condition. If normal, note "Good". Note sediment depth (such as "Film", "1/16", etc.) and sediment color (either) "Brown", "Gray", or "Mixed".
   - E. Enter make, type, volts and capacity of charger or chargers.
   - F. Indicate whether readings are taken on float or equalizing charge.
   - G. In "Remarks" enter any abnormal conditions of the battery such as: "Fractured positives", "Buckled negatives", "Expanded negatives", or "Excessive use of water by one or more cells".

Fig. 1.

installations without an emergency generator.

This takes into account the probable growth of telephone service in the area served by the central office, as well as the slight decrease in battery capacity which takes place with age. This is a minimum requirement, however. There are many batteries in the system that have been in service for 25 or 30 years.

General of Indiana prefers the Kathanode type, with approximately 90 per cent of present installations of this type. However, the lead-calcium cell is receiving consideration, especially for smaller central offices and PBX exchanges.

In the event of a power failure in most of the larger offices, ac power is supplied to the rectifiers to handle the telephone office load and recharging of the battery by diesel or gasoline-driven ac generators.

In addition to this function, emergency generating equipment also furnishes power for emergency lights, furnace blowers and other equipment in some offices. There is one truck-mounted generator for central offices which do not have emergency ac power facilities, plus nine small portable (two-man) generators.

All new batteries are purchased with transparent plastic cell jars, although there are many older rubber and glass jars in service. The transparent plastic jar permits visual inspection of sedimentation, plate condition, and electrolyte level. The plastic jars also have permitted a reduction in cell size, thus saving valuable floor space.

General of Indiana has standardized on selenium rectifiers for charging for several reasons. Rectifiers are noiseless and automatic in operation. Constant voltage rectifiers hold the correct voltage with almost no variation over a wide load range and require very little maintenance. It has been found that an equalizing charge is less frequently required when using constant voltage output rectifiers. Batteries are maintained by the full float method of charge.

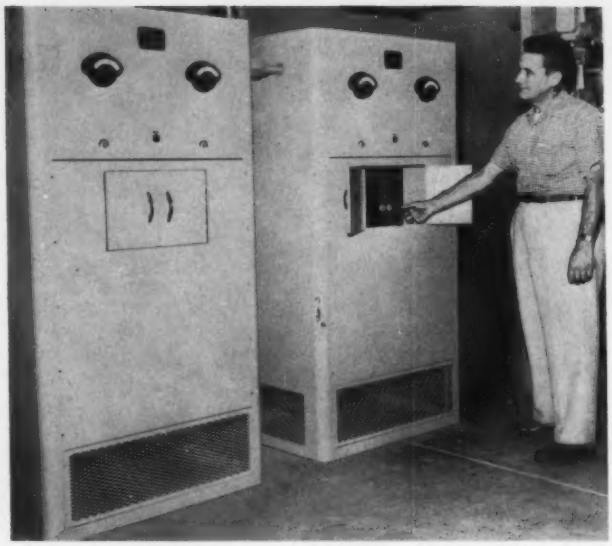


Fig. 3. Two selenium rectifiers in series provide power for telephone operation through the battery. Rectifiers are automatic. Battery can be given equalizing charge, if required, by manual switch.

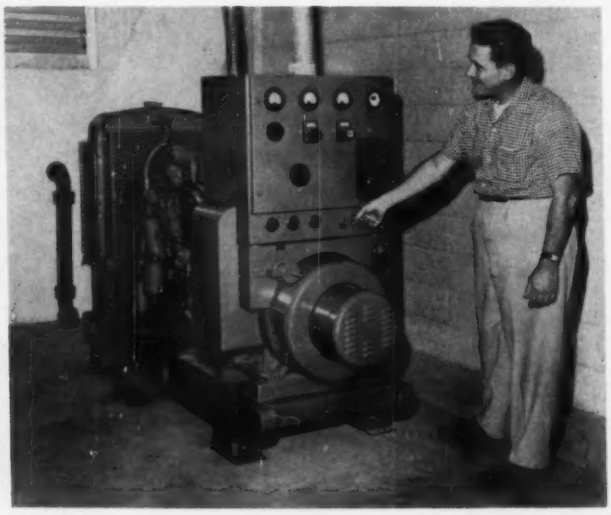
Rectifiers are installed in units up to 200 amperes capacity, depending on the size of the load. Even a small office will have two rectifiers instead of a single one. During many hours of the day, one rectifier is sufficient to furnish power and the second can remain idle.

Records are kept of each battery in service. The individual central offices submit quarterly reports on each cell in the battery to the general plant department *(Fig. 1)*. Pertinent information is transferred to a card index. Low cell voltage is noted. With these continuous records, battery performance can be checked and battery life estimated.

In each central office, the temperature, specific gravity and voltage of the pilot cell is taken daily.

Indiana General has adopted the practice of installing 26 cells (23 cells plus three end cells) whereas the previous practice called for 24. Three cells (end cells) are connected and charged

(Continued on page 60)



LEFT PHOTO, Fig. 4. End cells 24, 25 and 26 are not connected to the other cells except in an emergency to maintain battery voltage at the correct level. These cells are float-charged by the small rectifier on the wall at the upper right. RIGHT PHOTO, Fig. 5. Power for telephone operation in an emergency is obtained from this 50 kw generator unit. Generator also supplies power for emergency lighting in the building and to operate a sump pump. If this unit should fail, then power for telephone service would come directly from the battery.

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

WE HEAR CONSIDERABLE comment these days about the high cost of paper work for large business concerns and how it may be reduced. There is no doubt that numerous records are maintained and reports made by many telephone companies which serve no useful purpose. Certain controls are always necessary in any large business concern, but spending a dollar to save a dime will never pay a dividend.

The management of a 237-store chain which covers the British Isles recently asked: "Why do we have time clocks?" The answer was that they were necessary to make certain that all employes put in a full day's work. Management decided to trust the supervisors to make certain that all under them put in a full day and the time clocks were eliminated. Punctuality actually improved and the firm was able to abolish a million time cards and complicated records.

The firm then decided that people are smarter than machines, that clerks could be trusted, that the public is basically honest. In one year, it eliminated 26 million forms (weighing 120 tons).

The experiences of this British company have been noted and studied by a new and growing American profession, the paperwork and records managers. While no American firm has yet achieved the incredible degree of paper elimination attained by the above-mentioned British firm, several of our large companies are taking important action in the right direction.

For example: time clocks have been eliminated for all clerical employes at Procter & Gamble and the Chrysler Corp.

The Richfield Oil Co. was able to get rid of two-fifths of all its records and cut down expenditures for new file cabinets from $20,000 to $5,000 a year.

Columbia Broadcasting System (CBS) was able to eliminate 15 million pieces of filed paper.

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Coronet magazine for January 1961 carries an interesting article on telephone directories in New York City titled: "They've Got Your Number," by Jo Hubbard Chamberlin. The article states in part:

"The New York City's alphabetical telephone directory is one of the most widely read books in the world, although it has no plot, comparatively few complete sentences and the characters keep changing all the time. The man responsible for editing, publishing and distributing this annual best seller is a little-known New Jersey commuter named Lee J. Jordan.

"He churns out 10 million directories for the New York Telephone Co., covering not only the city's five boroughs, but all of Long Island and three adjacent counties—a total of 13 alphabetical and 20 classified phone books. In the down-state New York area, there are 3½ million alphabetical listings, with almost 800,000 in Manhattan alone. And Jordon's record for accuracy is remarkable. There are fewer than 25 mistakes per 100,000 listings.

"Preparing these directories is a mammoth job, even for Jordan's staff of 600. Approximately 33 million pounds of paper, 65,000 gallons of ink and 1,078 yards of binding material are required, and it costs roughly 5 million dollars to print the 5,870-page New York City books alone.

"Some phone books are used so often that they must be replaced every three days. Booth 17 in the Grand Central Terminal is the busiest phone booth in the world. It handles more than 50,000 calls and helps to wear out 100 directories annually.

"The Library of Congress, the New York Public Library, the Chicago Public Library, the Los Angeles Public Library and similar institutions maintain large collections of directories. The Library of Congress, for example, carries 1,800 current U. S. directories, 26,000 non-current ones, 1,000 current foreign directories and 4,000 non-current ones.

"The main branch of the New York Public Library keeps the phone books of leading cities, U. S. and foreign, dating back to the first directory published in New York City in 1878. This was a printed list of 271 names on one sheet of paper. Forty-four are still in business, four at the same address.

"Collectively, the five-volume New York City alphabetical directory is the nation's biggest. As for the largest individual book, Manhattan and Chicago are tied with 1,800 pages each."

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Extension cords for light and power have always been a problem around the telephone exchange. A recently developed device known as the Cardomatic Job Lite Reel which extends and locks in any distance up to a 20-foot cord length should be well received by telephone companies everywhere. When not in use, the cord retracts automatically into its reel housing. This is a valuable safety feature and insures long cord life.

The reel can be set on any flat surface or may be hung on wall or cabinet. It swivels in any direction and its features include an all steel snap-open light guard for easy opening for bulb changes. The pistol grip handle of impact-resistant phenolic contains a convenient built-in electric outlet for power tools.

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The Western Electric Co. will manufacture more than 17 million of the new "slim-line" spring cords for telephones this year. It is reported that this cord is smaller in diameter than previous spring cords. It also weighs less, is more attractive, and will have a longer service life.

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Crosstalk: "Dignity" is defined as what a politician loses with.

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The difficulty of being a good sport is that you must lose to prove it.

Telephone Facilities

PLAY MAJOR ROLE

in election campaign

By Richard G. Houdek*

R. G. HOUDEK

THE QUADRENNIAL marathon peculiar to America—the national election campaign—now takes its place in the not-too-distant past along with cranberry scares, last summer's sunburn and the first September headcold.

And along with the recounting, recanting, and various remonstrations emanating from all sides, comes a great deal of retrospection concerning the "little people," those unheralded men and women behind the candidates, who worked tirelessly and devotedly, if not for a particular candidate, then certainly, for the principle of free elections, and an opportunity to air the differences of a diversified and extremely complex democracy.

But to our purpose: A great deal of editorial comment during the campaign was devoted to the importance of physical stamina in the case of each of the major presidential candidates, and deep concern was expressed for an anatomical area bounded by the voice box in the north and the knee, down south.

But little of this regard crossed the columns of the breakfast-table newspaper, relative to the many people assigned the task of paving the way for a smooth entrance of the aspirant; or to the planning of brief and private rest periods; or—and probably the most important! — to the installation of sufficient communications media to permit the candidate's every spoken word to be relayed to waiting hundreds of millions of carpers and captives throughout the world. Even with the unparalleled communications network, there now and then seemed to be a question of what had been said just an hour earlier!

After careful consideration of the means (the goals were the same, so need not be discussed here), it was agreed that the telephone installer-repairmen, cable splicers, operators, switchmen, and countless other telephonists should be remembered, along with the Murrows, Huntleys, Restons and Lippmanns, as that group which functioned here and there to furnish the world with the latest news about its aspiring, and expiring, leaders.

These masters of electronics repeatedly gave their last full measure of devotion across the country in the large urban automatic exchanges, and in the most modest, rural, magneto areas, with equal verve when they were called upon at the last minute to install telephone equipment on a temporary basis for a candidate coming to town "tomorrow," or "the day after." In doing so, they matched the hectic, split-second schedule of the presidential hopefuls.

In 1960, California constantly bid for attention to its bounty of 32 electoral votes; the candidates took heed; and companies like General of California came forward with cheerful color in

LEFT PHOTO: The working press met their deadlines from these tables, where the "right hand" of the typewriter was the long-distance telephone provided by the General company. These telephones at Long Beach, Cal.'s La Fayette Hotel enabled the press to call collect to their publishers with the latest scoop from the Nixon camp. RIGHT PHOTO: Also relaying news from the Nixon group were these two men reporting home for the Japan Broadcasting Corp. (N.H.K.). Hiroshi Takana, reporter, left, and Takeshi Miki, cameraman, are seen in Gen Tel's "telecart" whose facilities enabled them to report Nixon news from Long Beach. On this occasion, Takana and Miki were preparing a special TV show on the American elections for release to Japanese viewers. The "telecart" is one of eight portable stands supplied with color telephones and the six directories for the Los Angeles extended area.

*Mr. Houdek is Publicity Representative for the General Telephone Co. of California, Santa Monica, Cal.

the cheeks, and even more in the equipment offered.

Vice President Nixon, Republican candidate for President, selected Whittier, a city of some 37,000 people served by General—and his home town—as one of the places to begin his campaign on Tuesday night, Aug. 2. District manager Frank Ashleigh and his staff were notified over the weekend, and crews installed two special public telephone booths, 15 desk telephones for the press corps, and wiring for four Western Union teletype machines at Whittier College's Hadley Field, in time for the traveling candidate to greet old classmates and fellow citizens.

Similar notice was given Bob Taylor, downtown Long Beach district manager, and A. J. Hammerl, East Long Beach district manager, when they and their staff were apprised on Monday, Oct. 16, of a visit by candidate Nixon.

The stopoff, connected with the Long Beach annual, and non-political, barbecue—the All States Picnic—was to last for three hours and accommodate an entourage of newsmen and advisors at two points in this city of 375,000.

At Recreation Park, site of the picnic and of a Nixon speech, eight colored telephones connected directly with long distance operators were distributed throughout the orchestra-press section; and in addition, eight courtesy public coin telephone booths, two of them part of General's boothmobile, two regular aluminum booths with wheels and a trailer hitch for easy mobility.

The downtown La Fayette Hotel press room was outfitted with more direct long distance telephones, eight telecarts, inside editions of the boothmobile, making it Long Beach City's most communicative location for a brief period. In contrast, a room upstairs had its only telephone removed to provide a real respite for candidate Nixon and his family.

One week later, Long Beach supporters and friends of Lyndon B. Johnson were preparing a rousing Lincoln Park reception for the then vice presidential aspirant and senator from the Lone Star state.

Besides the rally regulars, the boothmobile, telecarts and direct long distance press telephones, a special telephone escort was given the candidate and his party from Long Beach heliport to the downtown rally site. General of California's mobile-telephone-equipped press car, upon the request of the local Democratic committee, was furnished, in the event there should be any mishaps between the helicopter seat and the speaker's platform.

Like its Republican predecessor, the show was a smashing success for those partisan fans, and in addition there was a non-partisan expression of delight on the way Gen Tel had come through.

The staff of R. E. Lucas, Lakewood district manager, played host to a rally staged for the man destined to be the 35th President of the United States, if only by a margin scarcely the breadth of a copper wire.

Held at the Douglas Aircraft Co.'s parking lot in Lakewood, the amount of "electricity in the air," generally credited to a Kennedy rally, might have been due partially to a set of installed paystations and extra cabling required for 10 colored press stations. The three in front of the speaker's rostrum were appropriately tinted red, white and blue.

Despite a vast array of politicos and well-known movie personalities, a real center of attraction during the campaign, seemed to be the "Boothmobile" provided by Gen Tel. Here, a group of the "Nixonettes" wait their turn for a chance to make a telephone call, using this new type booth which is trailer-mounted for easy transportation.

The "Kennedy Girls" from Long Beach try out Gen Tel's direct long distance telephone set-up during Nov. 1 Democratic rally in Lakewood, Cal.

Ontario district employes were on hand with equipment to greet Richard M. Nixon upon his landing at Ontario International Airport on Nov. 7. R. D. Misamore's La Habra group furnished the complete telephone package for the final act of the 1960 Nixon story as it unfolded at 7:15 a.m., Nov. 8, in a small white house on Avonbury Ave., in East Whittier, Nixon's polling place.

The election's final act, with its triumphant recessional, "High Hopes" for

(Continued on page 63)

View of communication facilities for the national political campaign set up by General Telephone Co. of California. Reporters await the arrival of the Richard Nixons in East Whittier, Cal., where the Republican presidential candidate voted early Tuesday morning, Nov. 8, 1960.

REA Authorizes Ten Loans Totaling $6,220,000

TEN TELEPHONE loans amounting to $6,220,000, approved by the Rural Electrification Administration will help provide new or improved telephone service for 13,276 subscribers, 10,392 of them receiving service for the first time.

Farmers Telephone Cooperative, Bainsville, Ala.; $550,000; Jan. 4.

These and funds from prior loans will help the borrower to furnish initial service to 1,702 subscribers. A portion of the funds will also be used to finance the construction of an addition to the headquarters building at Rainsville.

REA loans to this cooperative are helping enable it to bring new and improved service to 4,632 subscribers. The five exchanges of the system are now furnishing dial service to approximately 2,350 subscribers.

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The Tri-County Telephone Co., Inc., Everton, Ark.; $718,000; Jan. 4.

This loan is intended to help furnish initial service for 906 subscribers and to improve service for 599 subscribers. This new borrower now furnishes dial service to 443 of the existing subscribers through exchanges at Alpena, St. Joe and Western Grove. The remaining 116 receive magneto service from the Jasper Telephone Co. which the borrower proposes to acquire.

Tri-County plans to construct new dial central offices at Jasper and St. Joe, and expand the dial facilities in the present Alpena and Western Grove buildings.

A portion of these funds will be used to refinance the borrower's existing indebtedness incurred by improving the existing systems.

R. E. Kellogg is both president and manager of the Tri-County Telephone Co.

•

Owhyee Telephone Co., Homedale, Ida.; $166,000; Jan. 4.

This loan will help provide initial service for 169 subscribers in Oregon. There will also be some service in a fringe area of Idaho.

In order to provide this new service, the borrower plans to construct a new dial central office in Jordan Valley, Ore.

Loans to this borrower will help it to furnish new and improved service to 2,265 subscribers in Idaho; and in Oregon. Three of the proposed four exchanges furnish dial service to approximately 1,890 subscribers.

•

Colver (Pa.) Telephone Co.; $520,000; Jan. 4.

These funds are designed to enable the new borrower to improve service for 1,068 subscribers and to furnish initial service for 403 subscribers. The borrower presently furnishes dial service to 364 of the existing subscribers; and the remaining 704 receive magneto service from the New Alexandria Telephone Co. which the borrower proposes to acquire.

A new dial office building will replace the magneto facilities at New Alexandria. The borrower plans to acquire the building now housing the Colver dial office, and to expand the dial facilities to handle the additional subscribers.

A portion of this loan is designed to help refinance indebtedness incurred by the company in modernizing its system.

Harold G. Payne is both president and manager of the Colver Telephone Co.

•

Texas Telephone & Telegraph Co., 4001 Westheimer, Houston 27; $2,415,000; Jan. 5.

The company plans to use this loan to help furnish initial service to 4,765 subscribers, to improve service for 159 subscribers, and to complete the authorized system.

In order to provide the additional service, Texas T&T plans to construct new dial central offices at Aquilla, Merit, and Richland, and enlarge existing dial facilities.

REA loans to this company are helping to make possible new and improved service to 19,544 subscribers. Twenty-nine of the proposed 51 exchanges are now furnishing dial service to approximately 8,400 subscribers.

•

Mon-Cre Telephone Cooperative, Inc., Ramer, Ala.; $309,000; Jan. 6.

This loan is planned to help furnish initial service to 487 subscribers. The borrower furnishes service through dial central offices at Ramer, Lapine and Pine Level.

Additional construction, according to proposed plans, will include modification of the present headquarters building at Ramer, to provide additional central office space; also, construction of a combined garage and warehouse on a portion of the existing building site. A lot adjoining the present property in Ramer will be purchased for pole storage; and the Lapine central office building will be extended approximately 10 feet to provide space for test equipment.

This and prior REA loans will aid in enabling the borrower to serve 960 subscribers.

•

Evarts (Ky.) Telephone Co., Inc.; $565,000; Jan. 6.

This loan is designed to help finance initial telephone service for 585 subscribers, and to improve service for 527 existing subscribers.

The Evarts company, a new borrower of REA funds, and a commercial company, now provides common battery service to the existing subscribers through an exchange at Evarts. It plans to construct a new dial central office there. A small portion of the loan will be used to retire the borrower's existing indebtedness.

On completion of the facilities planned for with the aid of this loan, the company will be providing dial service to 1,112 subscribers.

Mrs. Rubye W. Young is president of the Evarts Telephone Co., and Earl Dugger is the manager.

•

Chisago City (Minn.) Telephone Co.; $219,000; Jan. 6.

With this loan the company plans to furnish initial service for 507 subscribers in the present service area. It also proposes to serve 31 additional subscribers from its Lindstrom exchange.

These subscribers are now served by the Osceola Farmers Mutual Telephone Co., another REA borrower. Chisago City will acquire this line with its own funds. A portion of the loan is intended to be used to complete the authorized system.

REA loans to Chisago City will help enable it to furnish new and improved service to 2,943 subscribers. The five exchanges of the system currently are furnishing dial service to approximately 2,300 subscribers

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Mebane (N. C.) Home Telephone Co.; $283,000; Jan. 6.

The loan is designed to help furnish initial service for 642 subscribers. Portions of this loan will be used to improve service for existing subscribers and for expansion of the Mebane dial

central office to accommodate additional equipment.

This and prior REA loans will help enable the borrower to serve 2,292 subscribers.

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Totah Telephone Co., Ochelata, Okla.; $475,000; Jan. 6.

These and funds from prior loans will help enable this borrower to improve service for 531 subscribers and to furnish initial service for 195 subscribers in Oklahoma, and in Kansas.

As a nucleus for the new service, the borrower has acquired the following companies which now provide magneto service to the existing subscribers:

Wann (Okla.) Telephone Co.; Montgomery County Farmers Mutual Telephone Co., Tyro, Kan.; Hewins (Kan.) Telephone Co.; Elgin (Kan.) Telephone Co.; and the Liberty (Kan.) Telephone Exchange.

The REA states the borrower will be reimbursed for the major portion of these acquisition costs.

New dial office buildings are planned to replace each of the five acquired magneto central offices.

Loans to this borrower will help make possible new and improved service to 1,969 subscribers in the two states. The system, when complete, will consist of 10 exchanges, five of which now furnish dial service to approximately 925 subscribers.

The 1961 PBX Operator Has A New Approach

By Irma R. Cruse*

THERE'S A NEW look at the switchboard of most business firms these days.

When I mentioned this to a friend who was once employed as a PBX operator, she replied:

"Of course. That's obvious, isn't it? There's all the difference in the world between the board I used to work and the new dial switchboards with key sets, in-dialing and all the products which have been designed to make communications easier and more efficient."

I agreed with her. But I was thinking of another difference—a new look in the operators themselves!

"Oh, sure," my friend concurred, "there's a lots of difference between the way we looked then and the appearance of the girls who work at private switchboards now."

"You still miss my point," I emphasized. "I'm talking about a matter of attitude. Do you remember what it was like when we sat at the toll board and had to deal with operators of all the big firms and hotels? Can't you hear them now—big-hearted, willing to do anything for their bosses, but pretty formidable to other operators! I still remember how it felt to be new and uncertain of myself, and have one of them pass her call to me, then remark, 'You're a new girl, aren't you?' If there was an instant of hesitation on our part, we new operators were likely to get a brisk 'reaming out' from any PBX operator we dealt with."

My friend confessed sheepishly, "When I left the company to become a PBX operator, I made up my mind I'd be different. But before a month had passed, I began to feel and sound like the others who manned the private boards. . ."

As my friend and I went our separate ways, I, too, thought about the PBX operators I had listened to, and worked with. I recalled the times I would become frustrated over my efforts to complete a call between two business concerns whose operators seemed determined to come to blows over which would put her party on the line first. The verbal battles often became so violent, that listeners felt sure they would see hair-pulling and fisticuffs if the women ever saw each other face to face.

The operator who succeeded in geting her call set up, so that the other party was on the line ready before she rang the calling party, felt that she had scored a victory and felt a sense of pride in her success. She forgot that she probably wasted five minutes of her employer's time holding up the call unnecessarily while she engaged in her "feudin and fussin."

The modern PBX operator is not only well-groomed, and conscious of the importance of her appearance; she works at a switchboard that is the latest word in the world of communications, and (most important of all) she has that "new look" in her attitude toward her job.

Today's PBX operator is an exponent of cooperation, as opposed to the old spirit of competition and every woman for herself. She is eager to share experiences with operators from other firms and participates with them in many joint activities. She has a new understanding of her place in the framework of business; she has learned that she must keep her likes and dislikes in the background, and concentrate on being the voice of her company. She knows it is up to her to present to the public a pleasing image of her firm.

There are two things all operators of every era seem to have in common. From the time that first switchboard was placed in service so many years ago, the women (and men) who handled the plugs, cords, and keys have been true to their responsibility for maintaining secrecy of communications, and they have consistently shown quiet heroism during flood, fire, earthquakes and emergencies of every description.

Times have changed, boards have changed—but the operators with that "new look" have kept the best of the old look!

*Mrs. Cruse is staff supervisor on the staff of Southern Bell Telephone & Telegraph Co.'s general commercial engineer in Birmingham, Ala.

Economic Awareness Needed As a Base

"I cannot emphasize too strongly the importance I attach to the mission of the National Task Force on Economic Education. Nor can I say quite adequately how much I appreciate the fine cooperation of the AEA (American Economic Association) in undertaking this task.

"For what we have been trying to do, it seems to me, is to build a strong and efficient system of private enterprise and sound public policies on the quicksand of economic ignorance. This is not a base from which we can wage the economic war with the Soviet Union and expect to win."— DONALD K. DAVID, *chairman of the Committee for Economic Development (CED) and former dean of the Harvard Graduate School of Business Administration.*

Courts and Commissions

FCC OKs ITT License for Space Communication Study

A license to operate an experimental research facility for earth-space communication investigation has been issued to ITT Federal Laboratories, Nutley, N. J., by the Federal Communication Commission, it was announced in New York on Jan. 16.

The Federal Communications Commission has authorized this research and manufacturing division of International Telephone & Telegraph Corp. to make use of its recently completed space research communication station to bounce signals off the moon and passive satellites, and for basic research and study of space communication theory.

The authorization, which is for one year and subject to renewal, specifies operation on 2120 or 2299.5 megacycles until July 1, after which only 2299.5 mc may be used. The call letters are KFQXBR.

Located 8 miles from mid-town Manhattan, this new research facility consists of a 40-foot parabolic "dish" antenna and a building housing a powerful 10-kilowatt transmitter, and sensitive receiver equipment.

Under direction of the communication systems laboratory headed by William Sichak, the Nutley Laboratories will concentrate on studying the characteristics of radio signals which have traveled several hundred thousand miles through the earth's atmosphere and voids of space beyond.

Scientific experiments are expected to yield data which will be of great value to organizations interested in satellite communication systems capable of handling television as well as telephone traffic.

High on the list of programs for the ITT space facility is a project to evaluate the moon's surface as a reflector for continuous wave radio signals. According to Mr. Sichak, the moon's irregular surface, though not an ideal reflector, will be a useful and economical tool for testing future satellite radio equipment and techniques. Although the rough surface of the earth's natural satellite is unsuitable for "bouncing" television or wideband signals, it is convenient for testing transmission equipment.

Engineers responsible for operation of the station indicated that ITT also will be monitoring radio sounds from space, giving particular attention to signals from artificial satellites, stars and planets. This monitoring work is expected to increase in importance as progress continues in space exploration and human beings are sent into space.

Included as part of the receiver circuit is ITT's newly developed parametric amplifier, which virtually eliminates self-generated noise interference and enables the reception of signals which were previously undetectable.

The antenna "saucer" is designed to pivot freely on its pedestal so that it can sweep from horizon to horizon under automatic orbit program control when tracing man-made satellites and celestial bodies approaching from any direction.

In connection with frequency selection matters, the FCC said in an advising letter to ITT, "the commission wishes to stress that no determinations have been made either nationally or internationally as to what portion or portions of radio spectrum ultimately may become available for use by operational space communications systems." The ITT facility is a research and development tool.

Set Hearing on Raise, Service Change in Mo.

A hearing on the rate raise request of the Grand River Mutual Telephone Corp., Princeton, has been scheduled for Feb. 21 by the Missouri Public Service Commission.

The company had requested permission to increase rates and to discontinue two-party service, effective Jan. 1.

It was allowed to put these changes into effect pending results of the hearing.

Wis. Independent Asks Raise

The Wisconsin Public Service Commission on Jan. 18 was to have heard the application of the Preston Telephone Co., Inc., Weyerhauser, for a rate increase.

Denies Kan. Body's Move for New Trial in SW Bell Case

Shawnee County (Kan.) District Court Judge Paul H. Heinz on Jan. 6 denied a Kansas Corporation Commission motion for a new trial in the Southwestern Bell Telephone Co. rate case in which the commission granted rate increases yielding 1.3 million dollars of 5.8 million requested (TELEPHONY, Jan. 7).

Judge Heinz on Jan. 4 had accepted the report of Allen Meyers, court-appointed referee, that the commission's denial of the full rate increase was unreasonable and unlawful.

Meyers found the commission had erred in computing the company's rate base according to original value; and therefore, in granting the company only 1.3 million dollars of 5.8 million requested. The company had argued for a "fair value" rate base, which Meyers said was upheld in a 1924 Kansas case.

The rate increase has been in effect under bond since September, when Judge Heinz issued a stay against the KCC order, and appointed Meyers to make a detailed study of the case.

In his Jan. 4 judgment, Judge Heinz ordered the bond to remain in effect for 90 days. This was done in order to give the state an opportunity to appeal to the supreme court, a company lawyer said.

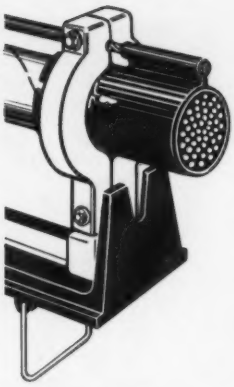
The commission is reported to have announced that it will take an appeal to the Kansas Supreme Court.

OK Stock Issue in Cal.

The California Public Utilities Commission on Jan. 4 authorized the California Water & Telephone Co., Monrovia, to issue 160,000 shares of $25 par preferred stock, with a total value of 4 million dollars, to help finance construction.

Ill. Independent Asks Raise

The Findlay Mutual Telephone Co. on Jan. 6 asked the Illinois Commerce Commission for a rate increase which would yield additional annual revenue



Cross section showing tri-function clamp for both cable and strand.

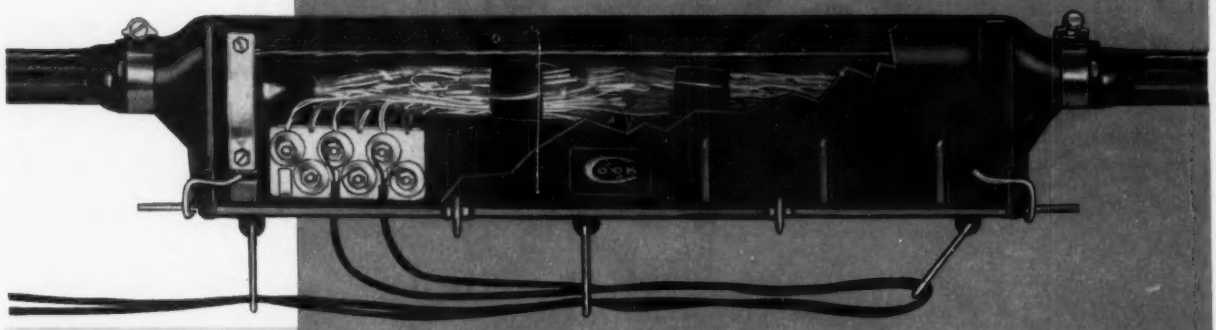
Available Now!

COOK

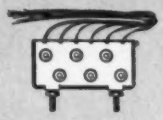
SPLICE COATS

for

Figure "8" Type Cables

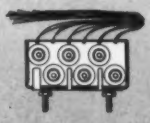


COOK TERMINAL BLOCKS AND LOADING COILS

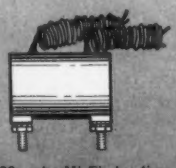


Six pair unprotected type terminal block.

Three pair protected terminal block with Minigap Arresters.



Six pair washer gap protected terminal block.



Three pair 88 mh Hi-Fi loading coil assembly with color coded insulated lead wires.

Featuring:

- Tri-function clamps that provide shield continuity through the splice, bonding of shield to strand at each cable opening, and support for the entire splice coat and termination equipment.
- Straight through installation features for cable and strand.
- Standard terminal block mounting facilities.
- Adaptability to lashed cables when modification kit catalog number 81-410 is used.

See Your Local Distributor

COOK ELECTRIC Company

2700 Southport Avenue Chicago 14, Illinois

of about $2,200. The increase would be effective Feb. 3 to the company's 400 subscribers.

General of SW Gets Raises At 5 Tex., Okla. Exchanges

The following rate increases became effective in Texas and Oklahoma exchanges of General Telephone Co. of the Southwest during the month of December, 1960:

	Old	New
Odem, Tex.; dial; 281 stations; Dec. 6.		
One-party business	$10.00	$11.00
Two-party business	8.00	9.00
One-party residence	5.00	5.50
Two-party residence	4.25	4.75
Ropesville, Tex.; dial; 230 stations; Dec. 6.		
One-party business	9.50	11.00
Two-party business	7.50	9.00
One-party residence	5.00	5.75
Two-party residence	4.00	4.75
Post, Tex.; conversion to dial; 1,647 stations; Dec. 1.		
One-party business	9.00	11.00
Two-party business	7.25	9.50
One-party residence	5.00	5.50
Two-party residence	4.00	4.50
Guymon, Okla.; conversion to dial; 2,726 stations; Dec. 4.		
One-party business	9.25	10.00
Two-party business	7.75	8.00
One-party residence	5.00	5.50
Two-party residence	4.40	4.75
Four-party residence	3.85	4.00
Gonzales, Tex.; conversion to dial; 2,299 stations; Dec. 18.		
One-party business	9.35	11.00
Two-party business	7.50	9.00
One-party residence	5.00	5.75
Two-party residence	4.50	5.00
Four-party residence	—	4.50

Increase in Texas Approved For SW States Telephone Co.

The city council of Grapevine, Tex., granted the Southwestern States Telephone Co., Brownwood, a rate increase, effective Feb. 6.

Newly authorized rates are as follows:

One-party business	$8.00
Two-party business	6.25
One-party residence	5.00
Two-party residence	4.00
Four-party residence	3.00

Introduce Emergency Party Line Use Bill in Colorado

Colorado State Senator Earl A. Wolvington on Jan. 11 introduced a bill which would penalize persons who tie up party lines in an emergency, by imposing fines and jail sentences on them.

Senator Wolvington's measure would provide a fine of up to $1,000 and a 90-day jail sentence to anyone who refuses to immediately yield a party line for an emergency call.

The proposed bill would also penalize persons who falsely request use of a party line on the pretext of an emergency. For this offense, a possible fine of $100 and a 10-day jail sentence could be imposed.

The bill would require that a warning of the possible penalties be printed in every telephone book.

Senator Wolvington said several instances in Colorado where persons have refused to give up the line to permit an emergency call point up the need for legislation.

(EDITOR'S NOTE: Similar laws, governing the use of party-line service, have been enacted in 30 other states—Alaska, Arizona, Arkansas, California, Connecticut, Georgia, Idaho, Illinois, Indiana, Iowa, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Virginia, Vermont, Washington and Wisconsin.)

"That fellow is going to make a very fine, aggressive telephone employee...he already talked me into two weeks vacation with pay before he started working for us."

Bell of Canada Offers Blue Book in Braille

Blind subscribers of the Bell Telephone Co. of Canada in Ontario and Quebec have let the company know of their sincere appreciation of a new aid offered them.

Thanks to a project by Art Gosselin of the Bell company's secretary's office, a braille Blue Book of Telephone Numbers has been made available.

In addition to initiating the service, Mr. Gosselin also performed the laborious task, at home in the evenings, of punching out on a Braille writer the 2,000 cover cards for the initial edition.

Mr. Gosselin's special editions of the Blue Book met with such approval, that the Bell of Canada has undertaken to produce another 2,000 copies, to be distributed through the Canadian National Institute for the Blind.

Paul C. O'Neill, director of public relations for the Institute has stated that "I cannot think of any service that has met with such unqualified acclaim among the blind as this book."

Commenting on the success of his project, Mr. Gosselin said, "The smart thing about these braille Blue Books, in addition to helping cut down calls to information, and being relatively low in cost, is that they engender a feeling among the blind that a large company considers them normal human beings, despite their visual deficiency. This is a compliment which they consider the highest that can be bestowed on them."

Since Mr. Gosselin's production of each book as a separate copy, a new method has been developed whereby it is necessary to make only one master copy from which others may be printed.

12 Excise Tax Repeal Bills Offered in 87th Congress

A dozen bills aimed at repeal of communications excise taxes were offered in the House of Representatives as the first session of the 87th Congress opened.

Two of the measures would eliminate other excises as well as those on communications. Rep. Gordon L. McDonough (R., Cal.) proposed repeal of the taxes on services and facilities. Rep. Frank D. Osmers Jr. (R., N. J.) would go even further and repeal "all" excise taxes.

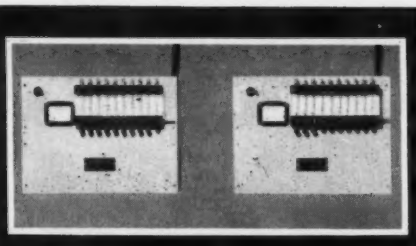
Bills for repeal of communications excise taxes only were introduced by Harold R. Collier (R., Ill.), Edward J. Derwinski (R., Ill.), Samuel N. Friedel (D., Md.), Edgar W. Hiestand (R., Cal.), George Huddleston Jr. (D., Ala.), J. Carlton Loser (D., Tenn.), Thaddeus M. Machrowicz (D., Mich), Harold B. McSween (D., La.), Charles M. Teague (R., Cal.), and T. Ashton Thompson (D., La.).

Set Neb. Rate Hearing

The Nebraska Railway Commission has scheduled a Jan. 13 hearing on the application of the American Communications Co., Belleville, Kan., for approval of rates for its operating exchanges in southern Nebraska.

The Exchange

"All government—indeed, every human benefit and enjoyment, every virtue and every prudent act—is founded on compromise and barter."—EDMUND BURKE, *Speech on Conciliation.*



Puregas Pressurized Systems
at work for...

THE UNITED TELEPHONE COMPANY OF PENNSYLVANIA

POST OFFICE BOX 189
236 NORTH SECOND STREET
HARRISBURG, PENNSYLVANIA

J. HOWARD FEDERHOOF
Staff Engineer

April 12, 1960

Puregas Equipment Corporation
578 Oak Street
Copiague, L.I., New York

Dear Sir:

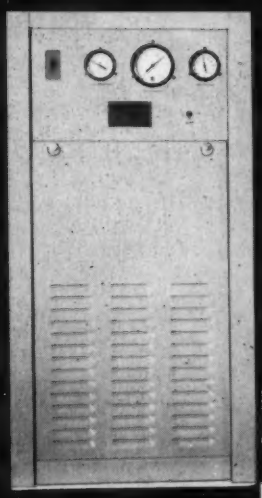
We have been well pleased with the results we are receiving from Puregas Equipment used to pressurize our cable plant. We place all cable, aerial and underground, which includes Exchange, Toll and Combination Toll of various sizes and lengths in a given exchange area under air pressure and have achieved very good results. Our cable trouble caused by water has been entirely eliminated in these areas. Interruption of service on toll lines as well as our subscriber lines is our most imporiant concern and how much this has prevented, we cannot begin to estimate.

One district alone, comprising 130 miles of cable, has been trouble-free of water for nearly three (3) years. The use of air pressure also permits us to locate breaks in the sheath, bad joints and bullet holes before they can cause trouble. As a result of this, our cable plant is kept in A-1 condition and permits us to do this work in good weather and during regular working hours, thus eliminating overtime for clearing and repairing cable trouble.

Based on our past results we propose continuing our air pressure work until all the cables are under air.

Very truly yours,
J. H. Federhoof
Staff Engineer

JHF/ajr



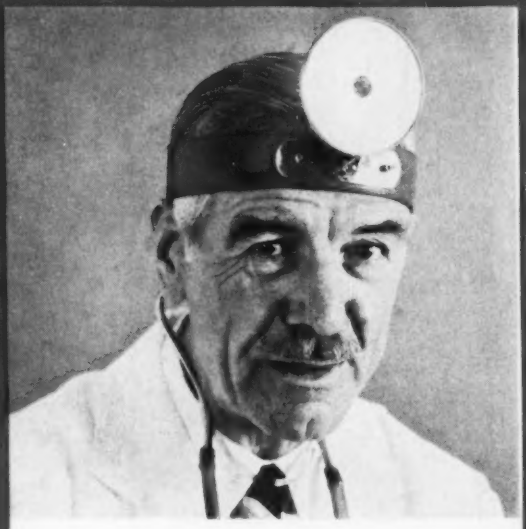
Model 1500
Air Dryer

The United Telephone Company of Pennsylvania has installed or ordered 24 Puregas Air Dryers to date . . . to find out how your exchange can just about eliminate emergencies with a low cost Pressurizing Program, send for the complete Puregas "Cable Pressurizing Equipment" Catalog.

PEC

PUREGAS EQUIPMENT CORP.
578 Oak Street, Copiague, N. Y.

Different people want different phones



TYPE 87 PHONE
For the small office. Three lines with hold feature on each line. Lighted button indicates incoming call. Signal button may be used for secretarial buzzing. Extension exclusion is optional. 10 colors.

AE makes a phone for every customer need

SPACE-MAKER* PHONE
Practical extension fits anywhere in the home. The dial tilts up to 45 degrees and rotates 360 degrees. Hookswitch swings from side to side in 180-degree arc. Choice of 10 colors.

Each person in your area has specific telephone needs. For his small office, this doctor needs a low cost, multi-line phone. But for his daughter's room, he wants a practical, space-saving extension.

To meet the needs of different customers, you must provide many types of phones—standard *and* special. Why? Because it's profitable! The customer who wants a special phone pays extra for the extra service.

Any new customers in your area? Any old ones with new telephone needs? If so, show them the AE phone best suited to their particular needs. Contact your AE representative. He'll be glad to give you full details on our complete line of telephone services and related instruments. Only AE offers 15 different phones to meet different customer needs.

AUTOMATIC ELECTRIC
Subsidiary of
GENERAL TELEPHONE & ELECTRONICS

GENERAL SYSTEM

*SPACE-MAKER is a registered trademark of Automatic Electric Company

Manufacturers' 1960 Sales Hit Record High, BDSA Reports

DOMESTIC and foreign sales of the communications equipment manufacturing industry in 1960 will amount to 2.93 billion dollars—slightly higher than earlier estimates—establishing another all time high, the Business & Defense Services Administration, U. S. Department of Commerce, reported on Jan. 6.

According to the industry, sales in 1961 are expected to show a moderate decrease from 1960. Shipments may decrease slightly in the first three quarters, but a reversal is anticipated during the fourth quarter that may result in a substantial gain, BDSA quoted industry sources as reporting. Employment in the industry may decrease somewhat in 1961 compared to 1960. Sales to the government for materials used mainly for national defense projects will represent approximately 30 per cent of the over-all 1961 total.

The BDSA in its report, gave the following background for the industry:

"The major communications equipment manufacturers are located principally in New York, Illinois, Ohio, and California. In recent years, plant construction programs have expanded, resulting in many new buildings. The industry has more than 50 material and supply warehouses, or distributing houses, throughout the country for servicing the operating telephone companies.

"A wide variety of highly complex switching and transmission items is produced by the manufacturing segment of the communications industry to meet the requirements of the domestic operating telephone, telegraph, and international radio and cable companies. More than one-quarter million different components and parts are manufactured . . . Expanding services for the government are responsible for the development of much new equipment.

"A new method of handling information—the central data-processing concept—has resulted in the growth of various forms of automation, electronic computers, and other automatic control devices, which have changed standards of speed and accuracy. This system was made available to the public recently."

The upward trend in the industry started in 1959, BDSA stated, when the volume lost in 1958 was regained. Production is expected to have been approximately 10 per cent higher in 1960 than in 1959. According to the industry, sales amounted to 2.48 billion dollars in 1958, 2.65 billion dollars in 1959, and an estimated 2.93 billion in 1960. About 30 per cent of the sales were to the government for equipment, mainly for national defense projects.

In 1960, the industry bought well over 1 billion dollars worth of materials and supplies from about 40,000 suppliers in more than 3,000 localities. Most of the suppliers are in the so-called small business category.

Considerable expenditures are being made, BDSA said, for the expansion of research laboratories to develop new techniques, create new manufacturing methods, and design new equipment. New tools, plastics and textiles, new alloys, finishes, and automation, originally developed by the communications industry, are being adapted to other industries.

In 1960, employment rose to about 188,000 workers, who were paid more than 1 billion dollars. According to a BDSA survey, the communications equipment manufacturing industry employed 163,000 workers in 1958, 173,500 in 1959, 188,000 in 1960, and will employ fewer workers in 1961.

The level of exports and imports of communications equipment is low compared with domestic consumption. However, an upward trend in the industry export sales is expected as part of the National Export Expansion Program.

Telephone instruments and dial switching equipment, BDSA stated, are the common production indicators as to the trends of the communications industry. *Table 1* shows the principal items of equipment manufactured by the industry in the period 1958-60.

TABLE 1—PRODUCTION OF COMMUNICATIONS EQUIPMENT INDUSTRY, BY PRINCIPAL ITEMS, 1958-61

PRODUCT	UNIT OF MEASURE	QUANTITY		
		1958	1959	1960*
Telephone sets	sets	7,005,915	8,584,273	8,842,000
Dial central office equipment	lines	3,177,635	3,354,076	4,098,000
Dial PABX equipment	lines	463,322	601,098	777,000
Manual central office equipment	positions	4,719	6,855	4,000
Manual PBX equipment	positions	8,882	12,471	8,580
Ringing machines	units	19,387	22,018	26,400
Repeater equipment (voice and telegraph)	repeaters	362,016	338,623	372,500
Intercommunications equipment	stations	11,647	23,036	24,600
Telegraph station equipment	instruments	50,921	55,186	62,300
Protectors, communications	units (M)	3,438.2	3,561.7	3,700
Cable terminals	units	940,178	1,193,451	1,300,000
Telephone booths, metal	booths	26,431	22,977	28,000

*4th quarter estimated. Source: Quarterly BDSA survey.

AT&T to Hold Annual Meeting in Chicago

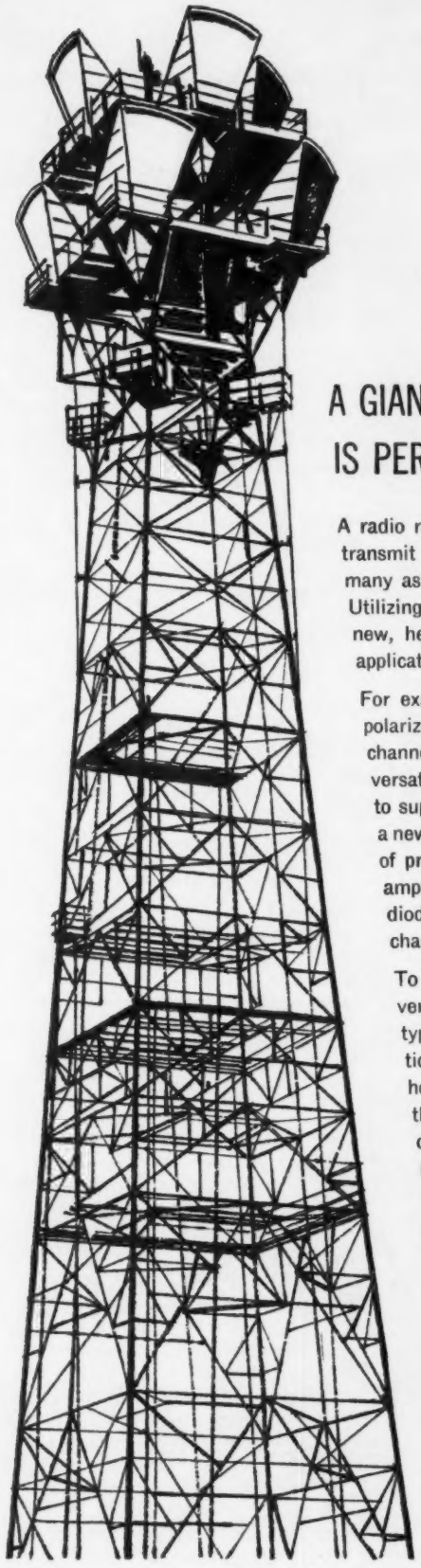
The American Telephone & Telegraph Co. announced on Jan. 10 that its 1961 annual meeting would be held Apr. 19 in Chicago—the first time in 76 years that an AT&T annual meeting has been held outside of New York City.

The meeting will be held in Chicago's new McCormick Place exposition center.

Some 150,000 of the company's 1,900,000 stockholders reside within the Chicago metropolitan area, and almost the same number live in the rest of Illinois and neighboring states. The new meeting site, therefore, will give many shareowners who have not previously been able to attend the AT&T meetings an opportunity to do so.

Because of increasing attendance over the years, the last two AT&T annual meetings were held in the Kingsbridge Armory in New York. The 1959 meeting drew a record attendance of 11,900 shareowners and 11,200 attended the 1960 meeting.

It is estimated that Chicago's McCormick Place will accommodate 15,000, in addition to providing adequate space for company exhibits, luncheon facilities, cloak rooms, etc.



A GIANT RADIO HIGHWAY IS PERFECTED FOR TELEPHONY

A radio relay system operating at 6 billion cycles per second and able to transmit 11,000 voices on a single beam of microwaves—several times as many as any previous system—has been developed at Bell Laboratories. Utilizing the assigned frequency band with unprecedented efficiency, this new, heavy-traffic system was made possible by the development and application of new technology by Bell Laboratories engineers and scientists.

For example, they arranged for the waves in adjacent channels to be polarized 90 degrees apart, thus cutting down interference between channels and permitting the transmission of many more telephone conversations in the same frequency space. They developed ferrite isolators to suppress interfering wave reflections in the waveguide circuits; and a new traveling wave tube that has ten times the power handling capacity of previous amplifiers and provides uniform and almost distortionless amplification of FM signals. They devised and applied a new high-speed diode switching system which instantly switches service to a protection channel when trouble threatens.

To transmit and receive the waves, the engineers applied their invention, the horn-reflector antenna. Elsewhere, this versatile antenna type is brilliantly aiding space communication research in the reception of radio signals from satellites. For radio relay, a single horn-reflector antenna can efficiently handle both polarizations of the 6000 megacycle waves of the new system; at the same time it can handle 4000 and 11,000 megacycle waves used for existing radio relay systems. Thus it enables all three systems to share economically the same radio towers and routes.

Produced by the Bell System's manufacturing unit, Western Electric, the new system is now in operation between Denver and Salt Lake City, and will gradually be extended from coast to coast. This new advance in radio technology is another example of how Bell Telephone Laboratories works to improve your Bell communication services.

BELL TELEPHONE LABORATORIES

World center of communications research and development

W. H. Dean., Ore.-Wash. Company Chairman, Dies

Wade H. Dean, 75, chairman of the board of Oregon-Washington Telephone Co., died at his home in White Salmon, Wash., on Dec. 15, 1960.

Mr. Dean was born in St. Elmo, Colo., on July 17, 1885. His first business venture was a stage line in the White Salmon area. In 1905 he traded the stage line for the White Salmon Valley Telephone Co. which consisted of a switchboard, a line and 38 telephones. Mr. Dean was lineman and night operator, while his wife, Mrs. Effie M. Dean, acted as operator.

In 1907 he allied this property with two other small companies in the Hood River Valley, forming the Oregon-Washington Telephone Co. Mr. Dean became its president in 1937, and, in 1957, chairman of the board, relinquishing the presidency to his son, Earl R. Dean. It was announced in March, 1957, that the Oregon-Washington company was merging with United Utilities, Inc. The two Deans were retained as chairman and president, respectively.

Mr. Dean was active in the affairs of the Washington and Oregon Independent Telephone associations, having served as an officer and a director.

Mr. Dean was a member of the Independent Telephone Pioneer Association; also an active member of the Washington Good Roads Association. He participated in the development of the Mid-Columbia area and in reclamation work in the Pacific Northwest. He organized the Mt. Adams Orchard Co., the largest D'Anjou pear orchard in the world.

Ray Dalton Dies; Retired From Wash. Co. in 1958

Ray Dalton, 64, former vice president and general manager of West Coast Telephone Co., Everett, Wash., and for many years, a leader in the Independent telephone industry, died Dec. 22 in an Everett hospital.

Mr. Dalton was born in Lawson, Mo., in 1896. He moved to Washington with his family at an early age.

He retired from the telephone industry as vice president and general manager of the West Coast Telephone Co. on Jan. 1, 1958.

During his 33-year association with the West Coast company and its predecessor companies, he achieved an outstanding record, both in the telephone industry and in community service. During this period, the West Coast company grew from a small, local enterprise to become one of the nation's largest Independent telephone companies.

After attending the University of Washington, Mr. Dalton spent 20 months in military service, including combat duty with the AEF in France and Belgium during World War I. Following the war, and until 1925, he worked for the Washington State Department of Public Works, and then accepted employment as commercial representative for the Puget Sound Telephone Co., in Everett. This company later became the West Coast Telephone Co., and Mr. Dalton advanced through the posts of Everett district commercial superintendent, in 1928; Everett district manager, in 1930; vice president; and then in 1942, to general manager of the company. Although he retired in 1958, he remained for a time in a consultant's capacity to West Coast Telephone Co.

Mr. Dalton was a past president and former member of the board of directors of the United States Independent Telephone Association. He was also active in committee work for USITA, having served on the executive committee and as chairman of the personnel committee.

In the state of Washington, he had served as president and as a director of the Washington Independent Telephone Association. He was also a past president of the Independent Telephone Pioneer Association.

Following World War II, for several years, Mr. Dalton served as a member of the Telephone Industry Advisory Committee of the War Production Board.

Surviving him are the widow, Doris; one son, Robert W., serving in Turkey with the U. S. Air Force; and a brother, Edwin H. of Seattle.

Safety Thumb Tacks

By John A. Bracken

Bits of safety reasoning, either pointed or flat, depending upon the way you look at them:

"The secret of a good *safety* campaign—is teamwork."

•

"Calculated risks—have no part in the practice of *safety*."

•

"The factor of *safety*—is always present."

•

"Watch a person who stops-looks-listens—and you will see a definition of *safety* in action."

•

"Practicing *safety*—should be contagious."

C. of C. Poll Shows Excise Repeal Is Urgent Issue

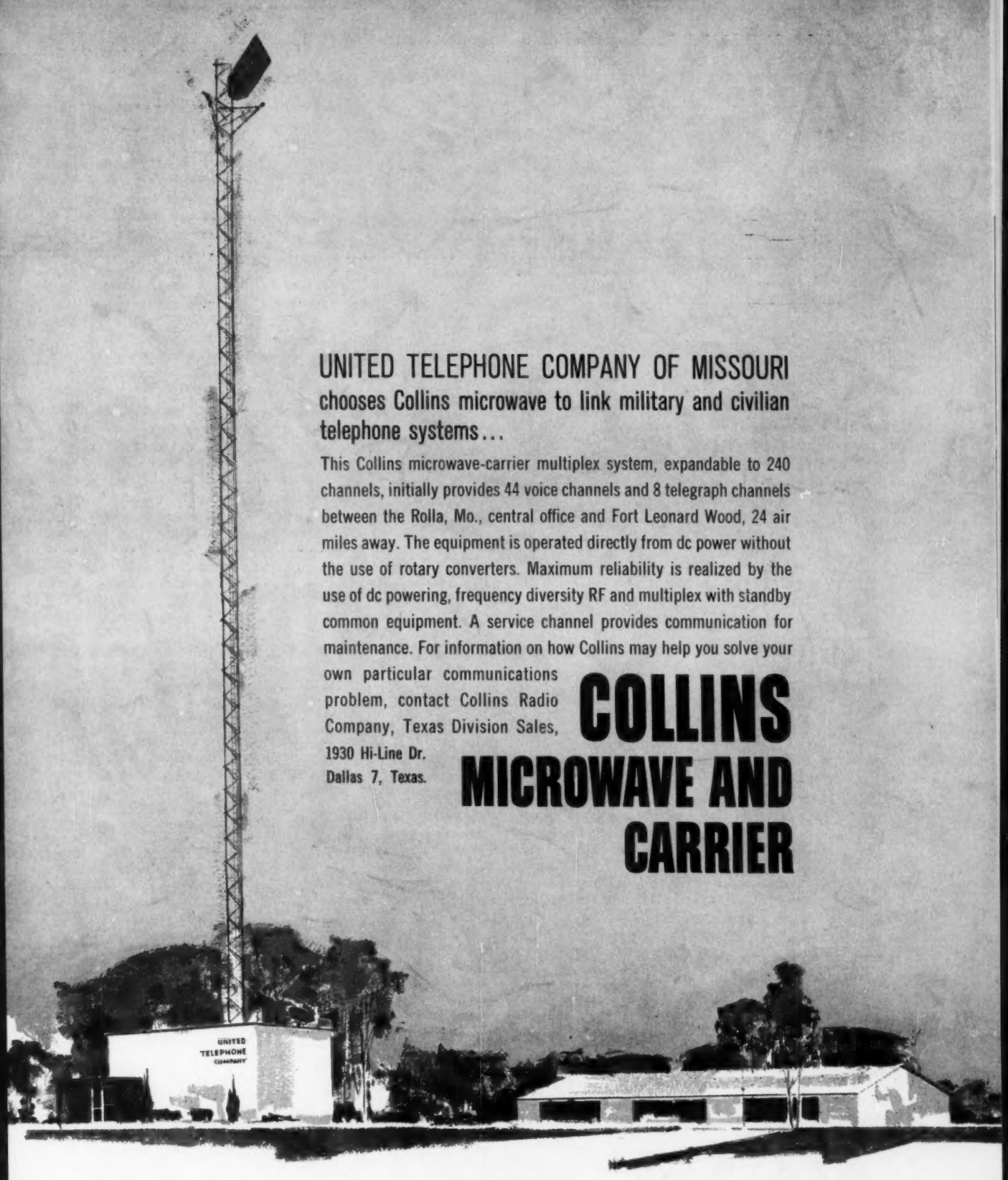
Repeal of the discriminatory excise taxes on communication services and passenger fares is the most urgent legislative issue in the transportation and communication field during the coming 1961 session of Congress, according to a poll conducted by the transportation and communication department of the Chamber of Commerce of the United States. Some 450 transportation and communication executives who are members of the national Chamber replied to the poll.

Continuation of the federal-aid highway program on a pay-as-you-go basis was chosen as being of major importance this year. High on the priority list was the encouragement of uniformity in state laws dealing with vehicle registration and other matters affecting transportation. Two other issues selected as urgent in 1961 were: Placing the postal service on a pay-as-you-go basis, with legislation designed to overcome an annual deficit of over 800 million dollars; and diversified ownership (or common ownership, as it is popularly known) of transportation modes.

Also receiving support in the poll was the matter of curbing unwarranted activities of the General Services Administration in rate cases before federal and state regulatory agencies. Finally, many of the executives polled gave considerable weight to the need for a single transportation agency in the federal government.

To Inquire Is Basic

"Imagination is more important than knowledge."—ALBERT EINSTEIN.



UNITED TELEPHONE COMPANY OF MISSOURI

chooses Collins microwave to link military and civilian telephone systems...

This Collins microwave-carrier multiplex system, expandable to 240 channels, initially provides 44 voice channels and 8 telegraph channels between the Rolla, Mo., central office and Fort Leonard Wood, 24 air miles away. The equipment is operated directly from dc power without the use of rotary converters. Maximum reliability is realized by the use of dc powering, frequency diversity RF and multiplex with standby common equipment. A service channel provides communication for maintenance. For information on how Collins may help you solve your own particular communications problem, contact Collins Radio Company, Texas Division Sales, 1930 Hi-Line Dr. Dallas 7, Texas.

COLLINS MICROWAVE AND CARRIER

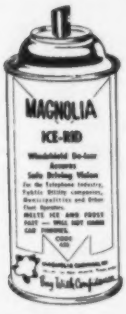
COLLINS

COLLINS RADIO COMPANY • DALLAS, TEXAS • CEDAR RAPIDS, IOWA • BURBANK, CALIFORNIA

SPEED UP POLE LINE REPAIR With Rust-Rid

Spray rust away instantly—here is the fast, simple and effective way to free corroded nuts, bolts, studs, pipe threads and other pole line hardware. You can spray from any angle—and reach into places that would usually be inaccessible.

SAFETY UP With Ice-Rid



Perfect for icy steps, doorways, equipment, poles, etc.; the quick, easy way to remove ice and frost from car windshields, windows, headlights, locks and any other surface where ice removal is necessary for safe operation. Will not harm car finishes.

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Oklahoma Independents Form Pioneer Chapter

Independent telephone pioneers of Oklahoma, in a meeting held during the recent convention of the Oklahoma Telephone Association, organized the Sooner Chapter of the Independent Telephone Pioneer Association.

Fifty-nine Oklahoma Pioneers attended the meeting. Minnie Lee Mullen of Inola, who was active in the formation of the chapter, presided at the meeting and called for election of officers for the coming year. Those elected are: President, Joe E. Trower of Mannford; vice president, Robert E. Harris of Purcell, and secretary-treasurer, Mrs. Mullen.

Mayme Workman, executive secretary of the Independent Telephone Pioneer Association, addressed the meeting and briefly explained the functioning of a state chapter.

Berney Simner, immediate past president of ITPA, was invited to address the group, and offered congratulations to the members of the newly organized Sooner Chapter.

Lt. Colonel Jackson Heads Signal Corps Facilities

Lt. Col. Robert J. Jackson Jr. recently assumed the position of chief of the facilities branch, comptroller division in the Office of the Chief Signal Officer, that office announced on Jan. 5.

A member of the U. S. Army Corps of Engineers, Colonel Jackson went to his new assignment with the Army Signal Corps from Europe, where he served from May, 1959 as post area command engineer of the LaRochelle area in France.

He previously held positions as post engineer in the Bordeaux area of France, and at the Walter Reed Army Medical Center in Washington. Colonel Jackson has also acted as engineer advisor with the Corps of Engineers in Thailand, and with the U. S. Air Force Mission to the Venezuelan Air Force. He has served as an engineer officer in Germany, Austria, England and Iceland, and as assistant air engineer at Mitchell Field, N. Y.

In civilian life, Col. Jackson worked in engineering positions with the New York City Tunnel Authority and with the Port of New York Authority.

A native of Brooklyn, N. Y., he grew up in Weehawken, N. J., and attended Stevens Preparatory School in Hoboken. He received a bachelor of science degree in civil engineering from the University of Alabama, and the degree of master of engineering administration from George Washington University, Washington, D. C.

He is a member of the American Society of Civil Engineers and of the Society of American Military Engineers.

Promote DCA Operations Head to Brigadier General

The promotion to brigadier general of the Defense Communications Agency's director of operations was announced on Jan. 4 by that agency. Brig. Gen. George P. Sampson, who has served with the Defense Communications Agency since July, received his star from Rear Adm. William D. Irvin, agency chief, in a recent Pentagon ceremony.

The new general holds a key defense position in the management and control of all global, long-haul military communications systems.

A native of Fulton, Mo., General Sampson attended school in St. Louis and began military service in 1929.

Entering active duty in 1940, he performed progressively important war duties in the Pacific theatre of operations. Following the war, he was an instructor at the Army's Command & General Staff College; the director, Communications Service Test Division, Army Field Forces; the assistant director, communications-electronics, Joint Chiefs of Staff; and deputy chief of staff, communications, Allied Forces Central Europe. Prior to his present position he was the chief, Army Communication Systems Division, Office of the Chief Signal Officer.

General Sampson is a graduate of the Command & General Staff College and the Army War College. Among his many awards are the bronze star medal and the Army commendation ribbon.

Develop Resource of the Individual Spirit First

The *Industrial News Review* had the following penetrating comments to make on the relationship of the individual to material progress.

"Just about everything in this country has been getting bigger.

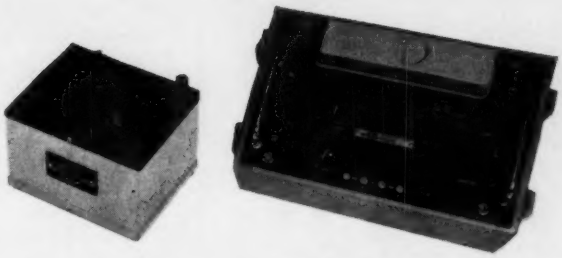
"This trend, the economists confidently tell us with hardly a dissenting voice, is not only sure to continue, but to accelerate. They blueprint a future of ever-increasing incomes, ever-improving living standards, the mass enjoyment of luxuries which would have been beyond the imagination of man not long ago.

"We are on the verge of explosive break-throughs in physical sciences. The age-old mysteries of space are being fathomed, and soon will be mysteries no more. The miracles of nuclear physics are at hand. Longer, healthier, happier lives for all are promised. And

AIRTRONICS Far-end Terminating Set, designed to be used in conjunction with the Model 20B Test Hybrid, supplies the Far-end terminations required for return loss and singing-point tests.

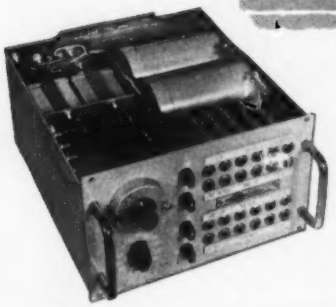
Generally, two precision networks, 115H and 115AL cover the standard cable layouts in exchange plant, (the 115H covering 19 and 22 gauge H88 facilities).

The Far-end Terminating Set consists of a precision network, network build-out decades, selector switch and jacks, and binding posts to give flexible access to the components.

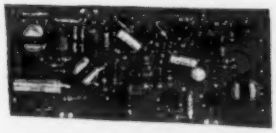


AIRTRONICS new multi-purpose, Portable Test Hybrid Set, Model 20B, makes acceptance, evaluation, and capacity balance tests easier, faster . . . locates cable opens accurately . . . accommodates standard networks. Either Singing-Point or Return Loss techniques can be applied. Accessories include external decade capacitor and variable resistor for use in locating opens, for compromise net, etc. Plug-in dial is also available.

DEPENDABLE PRODUCTS FOR MODERN TELEPHONY

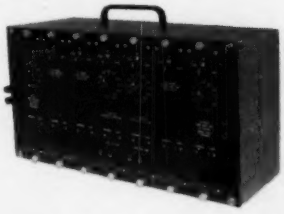


AIRTRONICS completely self-contained Program Equalizer cuts line-up time from hours to minutes. Designed for operating on standard program-loaded or non-loaded communications cables, this unit features pre-tuned circuits in 1½ KC steps from 5 KC to 25 KC. Simple switch adjustments control insertion loss of the LC network, select values of L and C, regulate line-to-drop ratios, control the circuit location of the RLC network etc. Available in portable, wall-mounting, or standard 19" or 23" rack-mounting arrangements.



The Switch-gain Amplifier — in a Speakerphone installation — functions as a voice-sensitive switching pad or loss, which *automatically* lowers loudspeaker volume whenever the subscriber is speaking. Loss is switched electronically to the transmitter channel while the subscriber listens. A guard circuit keeps speaker-to-microphone acoustic feed-back from causing improper switching when the speaker is operating. Net effect is reduction of acoustic coupling between loudspeaker and microphone to a degree where anyone, within 10 or 15 feet, can hear easily and distinctly without feedback or hollowness. Subscriber is not required to vary his gain control when shifting from a near to a more distant connection, or to toll

AIRTRONICS Switch-gain Amplifier fits all Speakerphone models. Priced under $60 f.o.b



AIRTRONICS standard Artificial Lines accurately simulate a loaded or non-loaded cable pair of any desired length — from 600 to 39,600 feet.* Multi-position switches afford instant control over total length or load section lengths, so that coil spacings may be set to better than 1%, or as much as 10%. Common irregularities such as bridged taps, mixed loading or coils omitted can be introduced in a moment.

*Available with plug-in units for either #22 or #24 gauge cable, or mixed 22 and 24 gauge. Other commonly used gauges available on special order.

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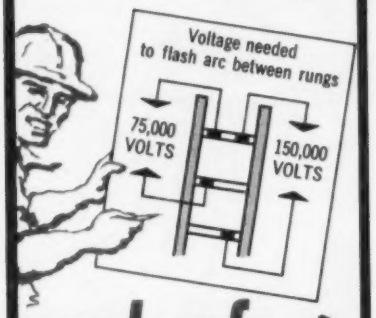
fiberglass ladders are strong



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Non-conducting, non-absorbent, yet strong and light as an aluminum ladder! Power company tests indicate Alco-Lite Fiberglass Ladders extremely safe around high voltages. Resist chemicals, acids, gases, fumes, and moisture.

Alco-Lite Fiberglass Ladders meet ASA Code A14.2 for portable *metal* ladders. The wider side rails are SOLID fiberglass—not plastic covered soft wood. The wide steps and rungs are high tensile strength aluminum. More riveting and bracing throughout!

Ladders safe, strong, more rigid, have longer life, because of exclusive design and construction. Maintenance negligible. *SEND FOR CATALOG!*

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West Darlington Street Ext.

FLORENCE 8 S. CAROLINA

we are not alone. All over the world, peoples and nations are swept along, to varying degrees, in the same tide.

"This is fine. Almost everyone wants more money, more of the things that money can buy, more of what we know by the word 'progress.'

"Yet a nagging question arises—the biggest unanswered question that confronts the changing world. While just about everything is getting bigger, is the greatest resource of all getting smaller? That resource is the individual. Not just people in the mass, but individual people—each different, each unique, each a spirit as well as an appetite. Is the individual in very real danger of being dwarfed by the bigness around him, and of being reduced to a statistic?

"It's easy enough to say that it can't happen here, even though we have all seen it happen in vast reaches of the earth. Easy enough, but untrue. This nation was founded on certain concepts—the fullest freedom for all, an unflagging sense of the spiritual nature of man, a passionate regard for the worth of every individual human being. But these, like all other concepts and philosophies, will wither away to nothingness unless they are eternally prized beyond all else and faithfully protected. They must be supported in absolutely specific ways. They demand the highest degree of individual independence and responsibility. If, for instance, we give to government the initiative and the power to regulate and dominate our lives in the name of security, the ultimate end will be the security of the penitentiary. Power once granted to government must always be balanced against a greater power in the hands of the people.

"We pride ourselves on our material achievements. But pride can result in a deadly blindness. Other nations, whose concepts are utterly opposed to ours, are producing their own wonders. Communist Russia and Communist China are, so to speak, moving mountains. The whip and the chain, used with dedicated ruthlessness, can also get out the goods, while the soul of man dies.

"It took centuries of turmoil, war and revolution to establish the rights of man—the rights of the individual. They can be lost overnight by sins of omission no less than sins of commission. A people whose eyes and minds are fixed on material ends alone will not long remain a free people. They will become merely instruments of power.

"There is no foreseeable limit to what we, through our economic, social and political organizations can achieve. It will be the ultimate irony if, in the light of this, we surrender the individual to material bigness—whether in government or anywhere else. We never had a more urgent need to uphold age-old principles and convictions that make for the only worthwhile kind of progress—confidence in something, faith in ideals, fairness, the determination to defend what one believes to be right.

"Walt Whitman wrote, a century ago: 'The whole theory of the universe is directed unerringly to one single individual—namely to You.' Man in the mass must never hide the face of the individual man."

Raytheon Names New England Head, Distributor Products

Frederick B. Simmons has been promoted to New England district manager for Raytheon Co.'s distributor products division. He will be responsible for sales of Raytheon electronic components and equipment marketed through distributors in the six northeastern states.

Mr. Simmons, who joined Raytheon Co.'s receiving tube division 31 years ago, has been customer service manager for the distributor products division since the division was created two-and-a-half years ago.

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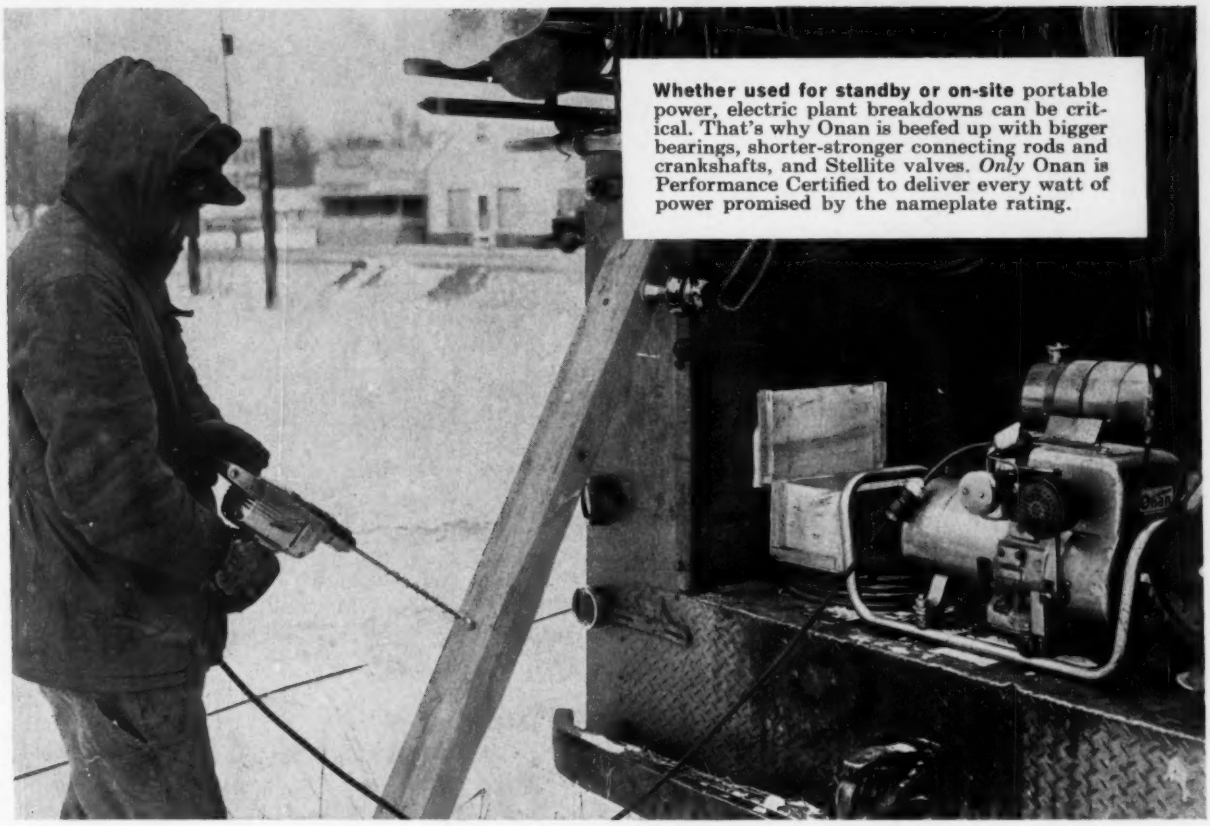

Whether used for standby or on-site portable power, electric plant breakdowns can be critical. That's why Onan is beefed up with bigger bearings, shorter-stronger connecting rods and crankshafts, and Stellite valves. *Only* Onan is Performance Certified to deliver every watt of power promised by the nameplate rating.

Only Onan is certified to give you all the power promised by its nameplate

It's a fact that many electric plants on the market today do not deliver the output promised by their nameplate rating.

Every Onan plant is given a rugged workout *under full load* before it is shipped—*your assurance* that the Onan you buy is ready for hard work the day you get it.

But this isn't enough. Independent laboratory inspectors pull surprise inspections to double-check our tests and testing methods. They pull a plant off the line, run it, stop it, load it, overload it, check and recheck. Their torture test gives positive proof of Onan's quality. End result: *Onan's exclusive Performance Certification* . . . your assurance of getting every watt of power you pay for.

So when you're tempted by an electric plant "bargain," make sure its nameplate rating is not "inflated." Be sure you're getting full measure for your money. Remember, *the electric plant that shortchanges you in power output is no bargain at any price!* Only Onan is Performance Certified to deliver everything the nameplate promises.

See Onan electric plants soon. Compare before you buy. You'll find your Onan distributor listed in the Yellow Pages. Call him or write direct.

PERFORMANCE CERTIFIED
We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.
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Model PA-05004
Schauer Battery Eliminator

Here's a sure SCHAUER power source for the operator's circuit on magneto switchboards

Schauer Type PA-05004 Battery Eliminator delivers constant, hum-free direct current to the operator's circuit. Equipped with relay for automatically transferring power to stand-by dry cells in the event of AC failure. Standard capacity is 4 volts DC at 0.5 amps. Steel case, for wall mounting is 5½"x6¼"x4".

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Ralph Parker Named to North Electronetics Division

The appointment of Ralph Parker as manager—component products of the Electronetics Division, North Electric Co., Galion, O., has been announced by W. W. Crissinger, vice president.

Mr. Parker will be responsible for all components marketing for the Electronetics Division, which will include the field engineering and field service groups as well as the technical representatives organization.

RALPH PARKER

The addition of Mr. Parker, the company states, will greatly strengthen North's position in the increasingly competitive components market. "Added emphasis," according to Mr. Crissinger, "will be placed on new components, as well as broader sales coverage in expanding markets."

Mr. Parker has a background in electronics sales and marketing. Previous to joining North, he was sales manager for the Aerovox Corp., New Bedford, Mass.

Earlier, he was manager-government sales, with International Resistance Co., a manufacturer of electronic components.

Mr. Parker attended the University of Pennsylvania and graduated with a B.S. degree in engineering from the U. S. Naval Academy.

Army Signal Corps Selects Official Corps March-Song

The "U. S. Army Signal Corps March," composed during the Army Signal Corps centennial year observance, has been selected as the official preferred song, the Office of the Chief Signal Officer has announced. The march and song are the first in 100 years of Signal Corps history to be officially selected.

The words of the song, composed by Allan Woolley, husband of an Army Signal Corps employe at Fort Monmouth, N. J., and dedicated to the Army Signal Corps, are as follows:

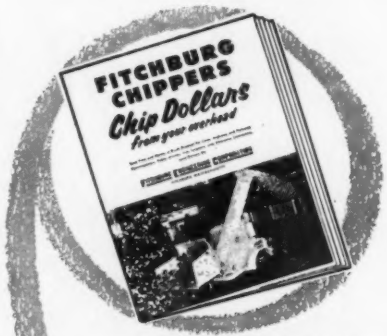
"From flag and torch in the Civil War to signal satellites afar,
"We give our Army the voice to command on battlefield or global span.
"In combat, we're always in the fight, we speed the message day or night.
"Technicians, too, ever skillful, ever watchful, we're the Army Signal Corps."

The song has been recorded by the U. S. Army Band. Tape recordings are being distributed throughout the Army Signal Corps; and the U. S. Army Chorus will record the song soon, also for Corps-wide distribution.

The music will be played following the official Army song, at Signal Corps events when other compositions are on a program.

Copies are available at the Office of Technical Liaison, Office of the Chief Signal Officer, to interested people outside the Army Signal Corps.

HOW TO SAVE MAN HOURS IN BRUSH DISPOSAL



This 20-page free book shows how to cut brush disposal costs up to 50%. Filled with facts, it has photos of Fitchburg Chippers in action, names of users, different models to solve specific problems.

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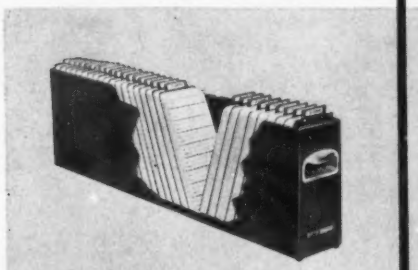

ASSIGNMENT-REPAIR DESK conveniently centralizes cable, terminal and line card records. Saves waste motion and affords generous desk-top work surface.

COMPACT TUBULAR STAND This space-saving unit handles up to 3000 stations. Provides convenient sliding work shelf. Rolls on ball-bearing casters.

ACME VISIBLE Telephone Record Systems speed installation and repair service

Today, with a record number of telephones in service—and with continued heavy station growth—efficient paper work and quick reference systems are vital. Many central offices have upped their efficiency by using Acme Visible Systems, designed in partnership with telephone operations experts.

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N. D. Independent First to Serve SAGE Direction Center

A significant event in Independent telephone history took place recently when the Air Force accepted a major portion of the Minot Air Defense Sector SAGE (Semi-Automatic Ground Environment) communications network from the Souris River Telephone Mutual Aid Corp., Minot, N. D.

Souris River is reported to be the first and only Independent telephone company to have provided communications services for a Direction Center in the SAGE program. ITT Kellogg provided communications equipment.

The internal communications system, the initial circuits for all completed and programmed communications equipment and several external communications outlets are estimated to have cost 5 million dollars.

Leonard J. Stone, Minot project manager of ITT Kellogg, said, "The system accepted (at the recent ceremony) is the first complement of communications equipment to reach an 'in-service' status in the Minot SAGE headquarters. In the future, other equipment will be added to make the system more comprehensive in its coverage."

The communications system with all the necessary cables and connections is composed of telephone, telegraph, and a device to feed data into the SAGE electronic computer. The telephone complex incorporates a dial system for ordinary usage and a "hot line" network for alert and command messages.

Ribbon-cutting ceremony at the cut-over of SAGE direction center at Minot, N. D. Col. James O. Beckwith, Minot ADS commander does the honors. Shown in front are, left to right: Richard Burk, Souris River Telephone; J. R. Hursch, ITT Kellogg; Paul A. Froemming, manager, Souris River; Colonel Beckwith; L. J. Stone and H. J. Tremblay, ITT Kellogg. In back are: John Miller, R. H. Richardson, H. F. Jones, and T. F. Hughes, all of ITT Kellogg; and R. C. Penny and R. E. Howell of Graybar Electric.

A large amount of communications cable is included in the project linking a number of facilities to the SAGE direction center, which is the nerve center of the air defense concept.

In the future, this will help enable ground-to-air radio capabilities for controlling the Minot AFB F106's as well as other fighter interceptors operating in the Minot Sector from the direction center. The assigned off-base radar sites have been connected to the direction center by a coaxial cable.

Souris River telephone, the prime contractor on the project, will also maintain the system. The company has administered the project throughout its installation.

ITT Kellogg was sub-contracted to furnish engineering supervision and to install the communications equipment.

Col. James O. Beckwith, Minot ADS SAGE commander, marked the official acceptance by cutting a ribbon to open the area in which the communications equipment has been installed for use.

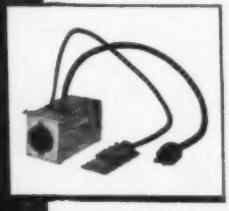
Others taking part in the brief ceremony were Paul A. Froemming, manager, and Richard Burk, both of Souris River telephone; Mr. Stone, James R. Hursch, Hubert J. Tremblay, John Miller, Raymond H. Richardson, Harry F. Jones and Thomas F. Hughes, all of ITT Kellogg, and R. C. Penny and R. E. Howell, both of Graybar Electric Co., another sub-contractor on the project.

Where
LIGHTING
counts most
PRECISION
controls best

America calls 150,000 of these phone booths the warmest, brightest welcome anywhere at night.

Naturally, it's *automated light* . . . available only from Precision Multiple Controls. Miniaturized, fail-proof, a 2-component Precision photo-electric control will keep this bright voice in the night shining for years.

If you use light, it will serve you better — save you money — if it's *automated light* by Precision.



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Pioneers in Photo Electric Lighting Controls

IN THE NATION'S CAPITAL

Concluded from page 22

ceived instructions to that effect. Again, we shall wait and see.

President-elect Kennedy, on Jan. 12 made a number of Interior Department appointments, in consultation with Interior Secretary Stewart Udall:

James K. Carr to be under secretary, replacing Elmer F. Bennett. Carr, 46, is chairman of the California Water Commission and a professional civil engineer.

Kenneth Holum to be assistant secretary for water and power, replacing Fred G. Aandahl. Holum, 45, of Madison, S. D., was a member of the South Dakota state legislature for two terms and is an official of a number of telephone and electric power cooperatives.

These appointments to Interior may have only an indirect effect on the telephone industry. But it still leaves a number of prominent public ownership advocates and REA co-op leaders not yet provided with jobs in the new Kennedy administration. The strong possibility exists, therefore, that one or more of these figures will land within the REA setup. And that certainly *does* have something to do with the telephone business these days.

Donnelley Corp. Announces Some Management Changes

The board of directors of The Reuben H. Donnelley Corp. on Jan. 17 announced some changes in the management of the corporation, as follows:

Curtiss E. Frank, formerly president and chief operating officer, was elected chairman of the board and chief executive officer.

Hamilton B. Mitchell, formerly an operating vice president, was elected president and chief operating officer.

David L. Harrington, formerly chairman of the board and chief executive officer, was elected chairman of the executive committee and chairman of the management policy committee.

Donald R. Arnold, formerly operating vice president of the telephone directory division, was elected senior vice president, telephone directory division.

Giles B. McCollum was elected vice president in charge of the direct mail and merchandising divisions.

Robert P. Boers was appointed general manager of the Chicago direct mail division.

The Reuben H. Donnelley Corp., headquartered in Chicago, has regional headquarters in New York, Philadelphia, and Washington, and branch offices in some 80 different locations.

Donnelley operates four major divisions: the telephone directory division, the direct mail division, the magazine publishing division, and the merchandising division.

TELEPHONE EXECUTIVES! SEE FOR YOURSELF... the most versatile business machine in the business world **DOES MORE JOBS!**

On Wall Street, Michigan Avenue . . . Main Street U.S.A. . . . "Thermo-Fax" Brand Copying Machines are copying correspondence, addressing labels, laminating, making statements, projection transparencies, and paper printing plates. Also, systems papers for as little as 2¢ a copy. Plus many more jobs.

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featuring
new
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(as standard equipment)

SAFETY SHOES

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SAN RAFAEL, CALIF.

Helpful Literature

ENGINEERING DATA TABLES—National-Standard Co. has issued a series of engineering data tables giving specifications and application data for its Copperply communication wire.

Copperply is a copper-coated steel wire which the company states combines the high strength of steel with the high conductivity of copper. The new engineering data tables give information on physical properties, transmission characteristics, sag-time relationship, sag and tension, angle-pole horizontal pull, and staking for heavy, medium, and light loading districts.

Five data tables are available, each completely describing one wire size. Wire sizes covered are 080-25 special (0.080-inch diameter, 25 per cent equivalent conductivity); 080-30, extra high strength; 095-22 special; 102-30 extra high strength, and 104-40 high strength and extra high strength. Mention wire sizes when requesting HL635.

•

OPTICAL MASER BOOKLET — The Bell Telephone Laboratories, Inc. have released a booklet describing the theory and design of the solid state optical maser. This is an 8-page booklet bearing a full-color cover picture of an operating maser emitting a pulse of coherent light.

Cover and article are a reprint of an article entitled "Infrared and Optical Masers," by Dr. A. L. Schawlow of the Laboratories' research department, which appeared originally in the *Bell Laboratories Record*. The author was recently granted the first patent on an optical maser, with Dr. C. H. Townes, now with the Institute for Defense Analyses.

The booklet explains that an optical maser is a device which produces a narrow beam of coherent light. In coherent light, all the waves possess a definite phase relationship to each other. It is this property in radio waves which makes it possible to modulate, direct, and control them, and to use them in communications.

Dr. Schawlow explains that because of the tremendously higher frequencies of light, vastly increased amounts of information could be carried on a coherent light beam, when technology is further advanced.

He adds, there are a number of other applications which will be of interest to communications. The activation of specific chemical reactions in the presence of competing compounds, application of tremendous amounts of energy to extremely small areas, and improved standards of length are among the potentials of the optical maser, the Bell Labs booklet reveals. Request HL635A.

•

RIGID COAXIAL TRANSMISSION LINES—A 20-page catalog covering its rigid coaxial transmission lines and associated equipment has been issued by the Andrew Corp.

From the company's design and production experience in the field of RF transmission, Andrew offers a selection of 50-ohm lines and fittings in the size range from ⅞-inch to 9 inches.

The new Andrew 3⅛-inch coaxial transfer switch is also introduced in this catalog (Catalog R). Request HL636.

•

BULLETIN ON POLE BUILDINGS—

TELEPHONY PUBLISHING CORP.
608 S. Dearborn St.
Chicago 5, Ill.

Please have the manufacturer send me without obligation the literature indicated by the following numbers:

HL635_____; HL635A_____; HL636_____; HL637_____;
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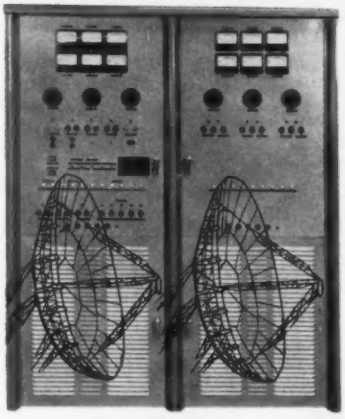
REFURBISHED

COMPLETE SCATTER SYSTEM



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• 60 Telephone channels • Frequency range 1700-2400 mcs • 1 Kw output • complete "package" including: Power amplifiers—F.M. Exiters — Dual diversity receivers — Two 28 ft. and two 18 ft. antennas — Horns and mounts—etc. . . . one year guarantee

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Slit and Cut Cable Sheath Fast and Easy!

Neuses *Cable Tools*

CABLE SHEATH SLITTER

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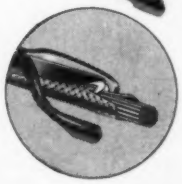

Just the tool needed for slitting most of the outdoor, heavy-duty types of cable coverings — large or small diameters.

Cuts into cable jacket at any point without previous notching. Size 6"x 1½". Price with 2 blades $4.20.

RING CUTTING CABLE TOOL

No. N-2060

A real handy tool for "ring" cutting the sheathing of INSIDE TYPE plastic, fabric, or rubber covered cable 3/16" to ½", or thin sheathed cable up to 1" diameter. Cut through cable sheathing *limited* to 1/32". Price $7.40.

Order direct or write.

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Small Tools for the Communication Industry.

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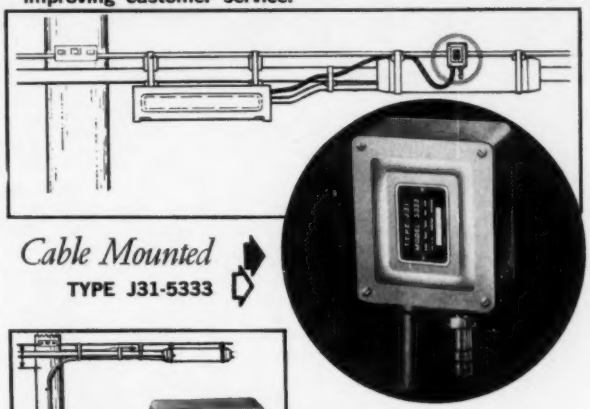
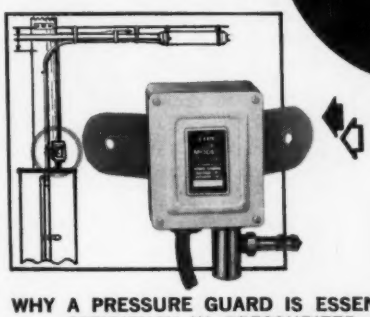
UE® Protection for PRESSURIZED CABLE SYSTEMS

with U.E.'s improved, compact Pressure Guard as the proven aid for reducing cable maintenance costs and improving customer service.



Cable Mounted

TYPE J31-5333



Pole Mounted

TYPE J31-5338

WHY A PRESSURE GUARD IS ESSENTIAL FOR MAXIMUM EFFICIENCY IN PRESSURIZED CABLE SYSTEMS

- The Pressure Guard monitors and protects cable at all times, not just periodically.
- The Pressure Guard ensures routine sheath breaks are detected and localized prior to service disruption.
- The Pressure Guard provides one more value that may be detected at the test desk.
- The Pressure Guard transmits its signals via working subscriber lines rather than requiring special circuits.
- The Pressure Guard reduces cable maintenance costs and improves customer service at very low cost.
- The Pressure Guard's low cost permits liberal usage for maximum protection.

SPECIFICATIONS

TYPE J31-5333

Field Adjustment Range	0 to 10 PSI
Factory Setting	2 ±¼ PSI on falling pressure
Pressure Response	4 ±½ oz.
Proof Pressure	30 PSI
Electric Rating	0.01 amp 100 V DC
Load Resistor	Carbon composition 270,000 OHM 1 watt

Drop Wire .....6' Type SJO#18 stranded 2.0 conductor
Pressure connection: ⅛ NPT (⅛ x ⅛ elbow provided separately; usually not required with direct sleeve mounting).

TYPE J31-5338

Same as above with the addition of pole mounting provisions and 6' of copper tubing.

Available through regular suppliers of telephone equipment. Contact them for new Type J31 Pressure Guard brochure. Catalogs covering other UE pressure, vacuum and temperature controls also available.

UNITED ELECTRIC

CONTROLS COMPANY

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specify
P&H
FULL LENGTH TREATED
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NORTHERN WHITE CEDAR POLES
Durable
Strong
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When you specify reliable P & H Penta Poles you *know* your investment is sound, your aerial plant is safe for many years of dependable, trouble-free service. Overhead construction with P & H Penta Poles has been field tested and proved through more than 50 years of participation in telephony progress.
PAGE & HILL, INC.
1017 PLYMOUTH BUILDING • MINNEAPOLIS 3, MINN.

A new illustrated bulletin outlining the advantages of Koppers pole building designs, and using the pressure-treated pole construction concept, is now available from the Wood Preserving Division of the Koppers Co.

The company states that only ground space limits the lengths and widths of its one-story, fire-protected structures, which are designed for industrial and commercial building users, for warehousing, manufacturing or office use. Designs are described as flexible, so that virtually all space and materials handling requirements can be satisfied.

There is a choice of square-foot requirements and heights, and three models of Koppers pole buildings—the Flat Top type K-102, Clear-Span type K-103, and Bay Gable type K-104—are illustrated and described in the bulletin. Also included are specifications, from pole spacing to framing. Request HL 637.

•

PIPE AND CONDUIT-BENDING DEGREE INDICATOR — An eight-page bulletin, No. E-301, with instructions, charts, and data for using the Greenlee No. 1807 Pipe-Bending Degree Indicator has been announced by the tool manufacturer. This bending degree indicator which was recently introduced, is said to simplify and speed bending operations and eliminate costly spoilage by automatically measuring the degree of bend as it is being made.

Greenlee states the new booklet features an easy method for laying out and bending pipe and conduit ½ inch to 6 inches in diameter. Steps are fully illustrated, and easy-to-understand examples are given. In addition, two pages of tables provide all data required for making 10-inch to 84-inch radius bends. Request HL638.

•

PRINTED FORMS—The new Suttle Press Division printed forms catalog has recently become available according to the Printing Division of Suttle Equipment Corp.

This catalog, according to the company the most comprehensive and complete recording of operating telephone company forms in the industry, is the result of detailed review and thorough system research. It includes general office forms, plant department forms, commercial department forms, traffic department forms, accounting department forms, as well as a complete listing of binders and accessories for all forms storage.

These standard stock forms are shelf items at the Suttle Press and are available for immediate shipment.

The company states the catalog is

Today, more and more men with maintenance on their minds will tell you . . . it's good business to protect lumber with PENTA treatment. Here's why:

1. Costs no more — Service records show PENTA treatment gives poles, cross ties and other lumber for exposed structure extra long life. Yet PENTA treatment costs no more than ordinary preservatives.

2. Won't leach out — Because PENTA is an oil-borne rather than water-soluble preservative, it doesn't leach out, leaving wood vulnerable to rot and termites.

3. Clean to handle — Construction and maintenance supervisors know that workmen handle clean wood faster, more efficiently — and with fewer kicks!

Reichhold is a major supplier of PENTA to the wood industry and to wood users. If you haven't done so yet, investigate this modern method of protecting your lumber investments — write for the name of your nearest Reichhold distributor of PENTA.

REICHHOLD

Synthetic Resins • Chemical Colors • Industrial Adhesives • Phenol
Hydrochloric Acid • Formaldehyde • Phthalic Anhydride
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Sulfuric Acid • Methanol

REICHHOLD CHEMICALS, INC.,
RCI BUILDING, WHITE PLAINS, N.Y.

Creative Chemistry . . . . . Your Partner in Progress

RCI

useful in setting up accounting systems as well as providing total needs on all forms requirements. Request HL639.

•

"BETA" CABLE MARKING SYSTEM —A six-page catalogue describing the new Beta wire and cable marker system has been published by Electrovert Inc.

Both Beta "Z" (for diameters .110 inch to .460 inch), and "S" for (diameters over 0.5 inch) type markers are described and illustrated.

Electrovert states that generous "in-use illustrations" show how Beta "Z" markers offer lifetime serviceability and improved application speed.

In addition, specifications and traceable drawings are presented on a detachable fold-out page for drafting departments' use.

Also included is an explanation of the packaging arrangement for Beta "Z" markers. Request HL640.

Government-Industry Balance

"The financial stability of government clearly depends on the successful operation of our industrial economy, and on the other hand no one can doubt that the climate established by government has a most important effect on the health and tranquility of our business system." — CRAWFORD H. GREENWALT, president, E. I. duPont de Nemours & Co.

Bulkley Is Product Head Stromberg Intercom Systems

David D. Bulkley has been appointed product manager for intercommunication systems in Stromberg-Carlson's commercial products division, it was announced by William E. Cutler, commercial sales manager for the division.

Mr. Bulkley goes to Stromberg-Carlson from the International Telephone & Telegraph Corp. in New York City where he spent six years in research and development administration for the company's network of research laboratories located in the United States and Europe. He has been most recently associated with the ITT subsidiary, Intelex Systems Inc., where for four years he was product line sales manager for imported electronic products.

Mr. Bulkley has been engaged for more than 16 years in the telecommunication industry, and has written extensively for technical and semi-technical journals. In his new position, he will be responsible for coordination of all intercommunication products manufactured by the commercial products division. These include automatic private internal telephone systems, loudspeaking intercommunicating systems, and manual private telephone systems.

During World War II, Mr. Bulkley served with the U. S. Maritime Service from 1943 to 1946 with rank of lieutenant (j.g.). He is a member of the Institute of Radio Engineers and the IRE professional group on communication systems, having served as treasurer in 1959-60.

Cassidy Appointed Labor Relations Manager for AE

T. Frank Cassidy Jr. has been appointed labor relations manager for Automatic Electric Co.

He will be responsible for assisting in the negotiation and administration of union contracts and wage administration.

T. F. CASSIDY JR.

Formerly manager, subscriber station apparatus, Mr. Cassidy joined the company in 1948 as manager of the paystation department, when AE purchased the paystation business from Gray Mfg. Co. of Hartford, Conn. Mr. Cassidy had served for some 20 years with Gray Manufacturing in numerous capacities, including manager, telephone sales; engineering manager, and plant manager.

He is a graduate of Rensselaer Polytechnic Institute with a degree in mechanical engineering. He has also studied law with the American Extension University and has acted as patent expert in several court cases.

Mr. Cassidy is a member of the American Society of Mechanical Engineers, a registered professional engineer in the state of Connecticut and a 34-year member of the Independent Telephone Pioneer Association.

PWC

TELEPHONE CABLES

For Every Application

INSIDE TELEPHONE

TYPE 123

Specifically designed for inside telephone station, intercommunication, private branch exchange and special plan wiring systems.

Available in No. 22 and 24 AWG from 6 to 101 pairs.

Light weight for easy installation.

Moisture resistant for damp ducts.

Fully color coded insulation for ease of termination and permanence in polarity identification.

Tough flame and abrasion resistant PVC sheath.

Rip cord to facilitate stripping at termination.

THE PLASTIC WIRE & CABLE CORPORATION

JEWETT CITY, CONN.

Hall Head of Sales; Graham To Lenkurt's Western Office

Lenkurt Electric has promoted Edward G. Hall to the new post of general commercial sales manager and has expanded its direct marketing organization to carry out its increased distribution activities.

E. G. HALL

The moves follow the recent announcement that Lenkurt Electric will take over its product distribution formerly handled by Automatic Electric Sales Corp. AE was the Lenkurt distributor to the U. S. Independent telephone industry, other utilities, railroads, and pipelines.

R. E. GRAHAM

Mr. Hall formerly was western district sales manager, supporting the AE Sales efforts in his district.

Succeeding him with that title, but with full sales responsibility, is Robert E. Graham, formerly manager of sales

(Continued on page 60)

KLEIN PREFERRED BY ELECTRICIANS AND INSTALLERS

If you know Klein for pliers, climbers, grips and other tools, you will be interested in the many other products in the complete Klein line, such as those illustrated.

In leather goods, Klein has been supplying the largest utilities for years with tool belts, safety straps, tool pockets and other equipment designed for maximum safety . . . longest life.

Klein knives and scissors are specially designed for electricians and built to stand hard usage.

5127 LEATHER POUCH
5227 WEB BELTING BELT
5129 FLASHLIGHT POUCH
2100-5 "XELA" ELECTRICIAN'S SCISSORS
5100 LEATHER SCISSORS POUCH
252-6-SW OBLIQUE PLIER WITH "W" STRIPPING NOTCH
301-6 LONG NOSE PLIER
1550-5 "XELA" SKINNING KNIFE

FREE BULLETIN: Write for 103TG Tool Guide covering the complete Klein line.

ASK YOUR SUPPLIER.

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Established 1857
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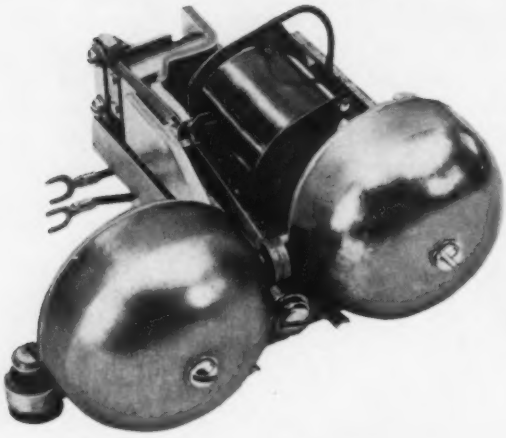
USI Straight Line RINGERS

*** USI Know-How**
"Rings the Bell" Again!



Versatility: The USI Straight Line Ringer is designed to fit any telephone which uses a WEC4A Ringer. All basic parts are interchangeable with the famous USI Multi-Frequency Ringer.

Sensitivity: High impedance with corresponding low power requirements means a reduction of interference in adjacent circuits and low attenuation in the talking circuit. USI Ringers are the industry's basis for comparison.

Economy: Durability of parts, complete customer satisfaction and lack of service calls mean the highest investment return for you. Why not do as countless companies have done? Specify USI!!

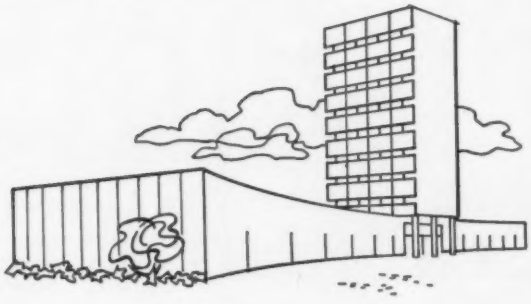
* RECOGNIZED EXCELLENCE IN RINGERS

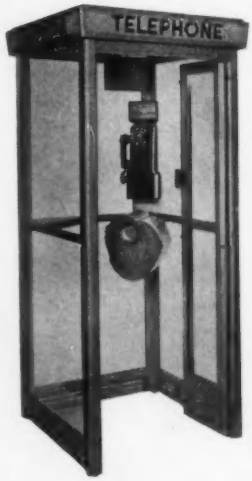
USI CORP.®

UNITED STATES INSTRUMENT CORP.

CHARLOTTESVILLE, VIRGINIA

PROVED **BEST** in design





Intelligent engineering always includes appearance. Slim posts, good proportions and a variety of glass and solid panel arrangements make this the most attractive booth available.

the BN **Booth**

For full particulars, consult your distributor or write direct ...
Benner-Nawman, Inc., 3421 Hollis Street, Oakland 8, California.

a B-N booth is a busy booth!

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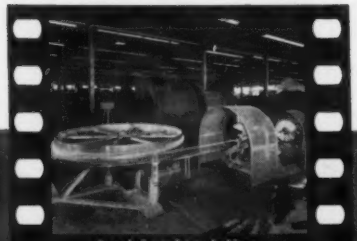
HELIAX

THE FLEXIBLE AIR DIELECTRIC CABLE

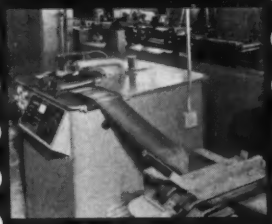
meets every communication requirement

Production scenes

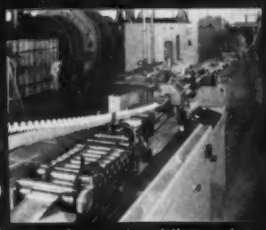


Applying insulation to inner conductor

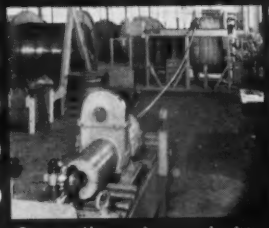
Take up of cable core



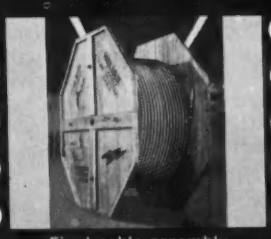
Splice welding strip stock



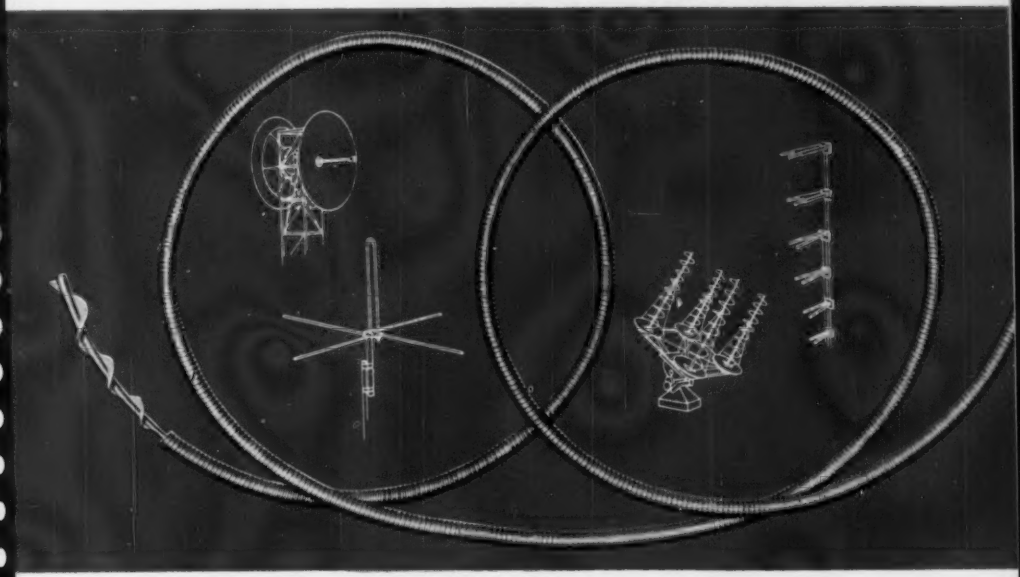
Forming and welding outer conductor over cable core



Corrugating outer conductor



Final cable assembly



Easiest to install...longest to endure

Produced in the new ANDREW plant facilities, HELIAX is the flexible, low loss, low VSWR coaxial cable for use in all applications from VLF through microwave.

The production cycle in which the copper sheet stock is formed around the cable core, welded and corrugated on a continuous basis is depicted in the film strip. Rolled sheet stock provides considerably closer tolerance tubing than is possible by extrusion or other methods.

HELIAX is the *only flexible* air dielectric cable. This flexibility is imparted by the unique, continuous helical corrugated construction. Bending torque required is about one-half that required for straight wall aluminum or copper tubing of the same size.

HELIAX has the greatest resistance to crushing or kinking. Again this is due to its unique construction. Resistance to physical damage from crushing or kinking forces is about twice that of conventional aluminum or copper cables of comparable size.

HELIAX is the only U. S. produced air dielectric coaxial cable capable of being manufactured in continuous lengths. Critical applications need no longer depend on splicing 1,000 feet or shorter lengths to make up a long cable run. HELIAX affords the only splice free, trouble free air dielectric cable installation.

STANDARD SIZES AND TYPE NUMBERS

SIZE	IMPEDANCE	TYPE NO.
3/8	50	H3-50
7/8	50	H5-50
7/8	75	H5-75
7/8	100	HT5-100
1 5/8	50	H7-50
1 5/8	75	H7-75
1 5/8	100	H7-100
3 1/8	50	H2-50
3 1/8	75	H2-75

ANDREW is your *only* fully integrated source capable of the design and manufacture of cable *and* fittings as well as antennas. ANDREW offers a wealth of engineering experience in the field of RF transmission devices.

You're invited to write for the new HELIAX Catalog H.

ANDREW Andrew CORPORATION

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ANTENNAS • ANTENNA SYSTEMS • TRANSMISSION LINES

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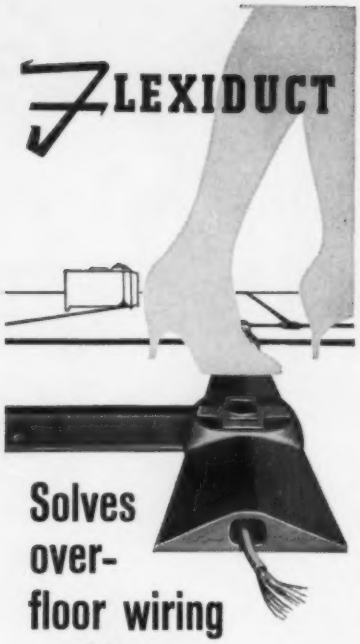

Solves over-floor wiring problems

- ECONOMICAL • EFFECTIVE
- FLEXIBLE • SAFE
- EASY, NOISELESS INSTALLATION

Only two parts handle all over-the-floor duct work—duct and universal fitting. Duct available in 3 sizes:

No. 1 Chase ¼" x ½";
No. 2 Chase ½" x ¾";
No. 3 Chase ¾" x 1";
Other tees, ells and risers also available.

UNIVERSAL FITTING
Part No. 345
(Patent Pending)

Always Keep Flexiduct on Hand Available through:

Buckeye Telephone & Supply Co.
Graybar Electric Co., Inc.
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Western Electric Co., Inc.
Winders & Geist, Inc.

Write for descriptive leaflet.

WINDERS & GEIST, INC.
2219 North Cotner Blvd.
Lincoln, Nebraska

to the Bell System and other direct accounts.

Marion C. Royalty, formerly product engineering manager, will be southwestern district sales manager, with offices in Dallas.

He will be succeeded by Tate B. Collins, formerly director of carrier & radio sales with AE Sales.

Two other former AE men also will take district sales managerships with Lenkurt Electric. Bliss K. McCann will manage the central district with offices in Chicago; and F. B. Swett, the southeastern district with offices at Atlanta.

Mr. McCann held the same position with AE and Mr. Swett formerly was AE staff engineer in the Atlanta office.

PROLONGING BATTERY LIFE

Concluded from page 28

separately from the others, although they are installed on the same rack. These three cells are automatically connected to the other cells in series, in the event of a prolonged battery discharge, to keep the battery voltage up to the proper level.

Regular city water, which has been analyzed, is used to replace that lost through evaporation in all except one of the 95 central offices.

The Sherwood central office in Fort Wayne has a typical battery installation handling 2400 lines at present with a capacity for 3800.

A 26-cell (23 cells plus three end cells) Gould battery (Type EWT-23) is installed in the basement *(Fig. 2)*. Two Flotrol rectifiers of 100 amperes at 50 volts furnish power for telephone operation *(Fig. 3)*. Three cells (numbers 24, 25, 26) are connected and charged separately, but are automatically placed in the circuit when required *(Fig. 4)*.

Emergency power is obtained from a 50 kw generator in an adjoining room driven by a six-cylinder diesel engine *(Fig. 5)*. Some of the power from the generator at 120 volts (ac) goes to the rectifiers. The generator also provides current for emergency lights and for driving a sump pump.

When the diesel engine starts, louvers in the wall open to provide circulation of air. Exhaust is vented outside. The generator unit is tested for one half hour each week. Since October 1958, the unit has run 132 hours, of which 15 minutes were actual emergency operation.

Knowledge Needs Memory

"The memory is a treasurer to whom we must give funds, if we would draw the assistance we need."—ROWE.

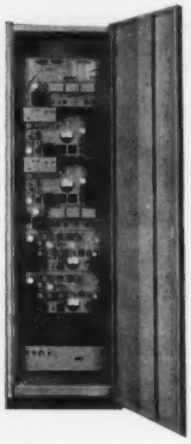
BUDELMAN bec

MICROWAVE

BUDELMAN POINT-TO-POINT RADIO SYSTEMS for the

- 2000 MC band
- 960 MC band
- 450 MC band

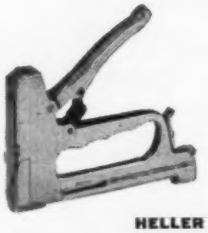
With capacity up to 30 voice circuits. Write today for technical data.



BUDELMAN
ELECTRONICS CORPORATION
375 FAIRFIELD AVE. STAMFORD, CONN.

DISTRIBUTED BY: Buckeye Telephone & Supply Co., 1250 Kinnear Rd., Columbus 21, Ohio. Empire Telectronics, 5708 Balsam St., Arvada, Colo. The Engineering Service, Box 178, Butte, Mont. J. W. Flint, 325 Virginia, Ponca City, Okla. Nelson Electric Supply Co., 1123 Slocum St., Dallas 7, Texas. Somerset Telephone & Supply, North Anson, Me. SpaceCom, Inc., 2331 4th St., Santa Rosa, Calif. Tele-Radio Systems, Ltd., 3633 Dundas St., W., Toronto 9, Ont. EXPORT: Westrex Corp., 540 W. 58th St., New York 19, N. Y.

WORLD'S FINEST STAPLING GUN
for wire or tubing



HELLER TM-1

The Heller TM-1 one-hand automatic stapling gun is specially designed for quick professional fastening of wire or small tubing. With controlled power chamber, staples can't pinch wire yet lock securely in hard or soft wood and plaster. One of a complete line of over 300 hand and power fastening devices made by Heller, a leader in the field for more than 35 years. Write Heller Industrial Fastener Division, Heller Roberts Mfg. Corp., 6115 Carnegie Ave., Cleveland 1, Ohio.

HELLER ROBERTS
Manufacturing Corporation

Voss Reports on Stromberg 1960 Activities

Introduction of the first commercial electronic switchboard in the Independent telephone field highlighted the past year for Stromberg-Carlson — a new concept in telephone communication representing one of the major developments in a very active year, John H. Voss, vice president and general manager of Stromberg-Carlson's telecommunication division, pointed out in a year-end report.

J. H. VOSS

"The switchboard, first being offered in the form of a private electronic branch exchange (PEBX), is a major commercial 'break-through,' heralding a new era in telephony," Mr. Voss stated. PEBX, compatible and competitive with electro-mechanical systems, was demonstrated at the recent USITA convention in Chicago. Early last year a complete high-speed, compact electronic switching center, designed and built specifically for military field service, was delivered by Stromberg-Carlson to the U. S. Army Signal Corps, and is now in use.

Mr. Voss also stated in his report that Stromberg-Carlson was first to introduce the dial-lighted, compact telephone in the Independent industry. Called the "Petite," this instrument helped to broaden the instrument market for operating companies, permitting them to meet the demand for a small instrument with new features, he said.

During 1960, Stromberg-Carlson produced its "COMPAK I," which is described as a space-saving, easy-to-install, 100-line CDO in package form. "This equipment makes it economically feasible to provide the advantages of step-by-step dial service in the very small exchange," Mr. Voss said.

A recent installation of the "COM-

IMPROVED DESIGN!

Extended mounting slot now fits ALL standard 12" or 8" pin spacings . . . eliminates costly re-boring.

Case® ALUMINUM CROSS-ARM TRANSPOSITION BRACKETS.

Many new carrier circuit designs call for a reduction in wire spacing from 12" to 8". Normally this means thousands of new pin holes must be bored . . . an expensive and time-consuming job. Now . . . the new, improved Case cross-arm transposition bracket with the extended mounting slot fits all standard 12" or 8" pin spacings . . . eliminates the need for costly re-boring, and saves you thousands of dollars per year. If you are planning to re-space and transpose wires from 12" to 8" spacings, be sure to check first with Case.

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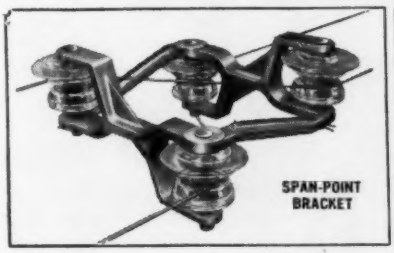
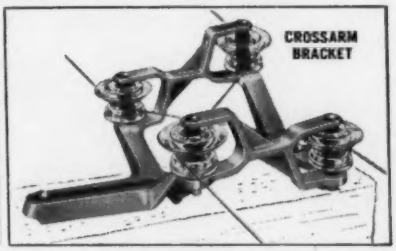
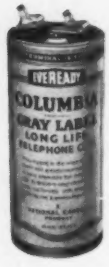




WHAT'S NEW AT SUTTLE

ALL-IN-ONE CABLE COAT

Designed for Independent Telephone Co. installation, Cook Electric's Cable Coat eliminates the need for taped splices and potting. A flexible neoprene coat covers the splice area completely and can be opened without damage at any time. Terminal blocks are filled with plastic resin and furnished with stud jumper wires for making cable conductor taps. Make connections by tapping specified skinned conductors.



DESIGNED ESPECIALLY FOR TELEPHONE USE

This is the original **Columbia** Gray Label "Long Life" dry cell *designed* for telephone use. It delivers long service life with uniformity and dependability. These batteries are packed 12 per carton. A good supply is *always* at Lawrenceville.

NON-CORROSIVE RODS AND CLAMPS

Joslyn Copperweld ground rods—and Copperweld ground rod clamps—give you a non-corrosive, copper-to-copper contact. Rods available in standard, ⅜" x 5′ to ½" to 6′; with tails, from ⅜" x 5′ to ½" to 6′. Free wrench for safety type clamps (not shown) if requested with order.

COLOR CODED ANSONIA CABLES

The Ansonia Ankoseal plastic covered cable is unaffected by acids, alkalies, fumes, sun, or other weather or earth conditions. The inside sheath is a continuous spiral of heavy aluminum alloy, providing an inductance shield and grounding circuit. Ankoseal cable is carried in stock, in Lawrenceville, for immediate shipment of less-than-reel quantities. Be sure to check current prices with **Suttle**—first.

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401 N. 15th St., Lawrenceville, Ill.
Phone: Lawrenceville 782

135 S. La Salle St., Chicago 3, Ill.
Phone: DEarborn 2-3108

PAK I" marked the first dial telephone exchange north of the Arctic Circle. Stromberg-Carlson installed this office at Kotzebue, Alaska, for the Trans-Alaska Telephone Co.—one of a network of similar exchanges that will bring initial service to a large segment of the 49th state, Mr. Voss reported.

"The Kotzebue installation was one of 342 new complete XY dial exchanges placed in service during the 12-month period. There are now over 3,000 central office installations of XY dial serving Independent telephone companies," Mr. Voss said.

"The year 1960 saw an increase in the application of microwave to communications," he continued. Stromberg-Carlson multiplex equipment was selected for several new large installations, maintaining the company's first place position among independent suppliers of multiplex gear."

A Stromberg-Carlson "Pagemaster" system helped to keep the Winter Olympics at Squaw Valley running smoothly. This is the same area-wide personal paging system using telephone facilities that has proven so successful in city-wide application by the telephone companies at Allentown, Pa., and Columbus, O. "Pagemaster" is now planned for adoption by several Independent telephone companies in 1961, Mr. Voss stated.

During the year, work was begun on supplying the communication systems for Air Force Titan missile bases. Five contracts totaling more than 12 million dollars were awarded to Stromberg-Carlson by the Ballistic Missile Center of the U. S. Air Force Air Materiel Command. Stromberg-Carlson has the responsibility for design, development, management, manufacture and installation of the systems at Titan bases, according to Mr. Voss.

Stromberg-Carlson's advance in new product lines was matched by a 15 per cent rise in the company's work force, he reported.

James D. McLean, Stromberg-Carlson president, also announced that the total number of people employed exceeded the 9,000 mark at year's end; of this number, 4,156 work in the telecommunication division.

Mr. McLean predicted that 1961 would be "even more exciting for Stromberg-Carlson with the outlook for continued growth in the electronics and communications industries." He forecast expansion in all areas where Stromberg-Carlson has an interest.

Do Unto Others

"The way to gain a friend is to be one."—MICHELET.

RANDOM PLANT THOUGHTS

Concluded from page 26

phone in the house. Also, through a telephone in the playroom or family room, parents may also check on the children playing there or call a child, if necessary.

(5) The use of the interphone for those who are ill or bedridden is another important advantage. An ill person may share in the family's activities and ask for assistance quickly and easily through the home interphone.

(6) The hands-free feature which enables any member of the family to answer an intercom call without lifting the receiver proves a real convenience.

(7) When children are playing near the front or rear door speaker, they can be called over the interphone. The volume is low enough that it will not disturb the neighbors.

There is no doubt that numerous other advantages will be made available to individual families after they have their homes equipped with interphone. Unquestionably, this device will prove extremely useful in emergencies, such as reporting a fire or accident, and it will also prove indispensable in calling for help or arousing the family in the event of a serious fire or disaster.

TELEPHONE IN ELECTION

Concluded from page 31

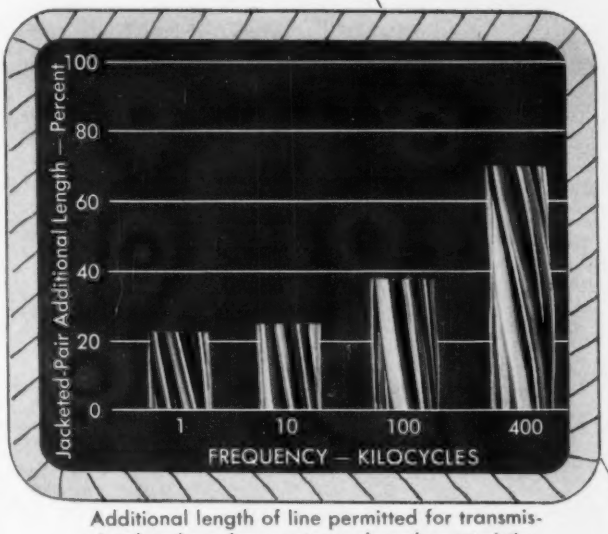
the imminent election of John Fitzgerald Kennedy, was played to a standing ovation 3,000 miles away in Hyannisport, Mass., and California telephonists had to content themselves with watching by television. But they knew that somewhere close by the Kennedy home, a host of operators, installers, switchmen, cable-splicers, and many other representatives had been hastily pressed into service for a "rush job" with apologies, because "We were not informed until ....."

Then it was all over. The candidates, who, for nearly three months, had been surrounded constantly by members of the press, the big and the small of the political world, and a host of voters and well-wishers, could look forward to a short rest on Nov. 9.

For telephone people, 1960 provided the usual rush of new installations for new customers, cut-overs to the latest equipment, and this year's big special, the national election campaign. It's all over for another four years, but not many who participated will forget the thrill of playing an integral part in mankind's greatest demonstration of democracy.

A word, too, about the many Inde-

now you can have
LONGER
LINES
with WB
JACKETED-PAIR
DISTRIBUTION WIRE



Additional length of line permitted for transmission loss based on wet weather characteristics. Jacketed-Pair vs Standard Construction (PE-15 March 1960)

Jacketed-pair Distribution Wire exhibits substantially lower loss during heavy rain and will, therefore, allow a longer line for an equal transmission loss. At one kilocycle this improvement permits a 22% longer line.

Write for full details shown in our new Bulletin T-6.

WB WHITNEY BLAKE CO.

NEW HAVEN 14, CONN. Telephone CHestnut 8-5515 TWX: NH 84

New techniques in COMMUNICATIONS

Gustav Hirsch Organization, Inc., offers the most comprehensive program in the communications industry — skilled engineering, quality construction and many special services.

GHO projects include toll dialing, microwave circuiting and automatic switching. For expansion or an entirely new system, GHO is ready to serve you.

pendent and Bell telephone companies across the land who contributed the millions of man-hours, without any thought of recompense, save the knowledge that partly through their efforts, many millions who make up this great nation are free to use their individual power of selection in picking a leader.

L. M. Berry & Co. Honors Two 25-Year Veterans

Two more L. M. Berry & Co. veterans became members of the telephone directory advertising firm's 25-Year Club in December, when Dorothy Dallas and B. D. Addington were welcomed into the group by Loren M. Berry in Dayton during a banquet in their honor. Mr. Berry, founder of the company, presented each with a gold watch and service certificate.

Loren M. Berry (left) awards gold watch and service certificate to B. D. Addington in recognition of 25 years service to L. M. Berry & Co.

Miss Dallas joined the company in Dayton on Sept. 15, 1935, as a clerk in the general office. After working in several general office departments, she was later assigned to the Ohio division, and was appointed Ohio production su-

Mr. Berry presents a gold watch and service certificate to Dorothy Dallas honoring her for 25 years service with the company.

BUDELMAN bec

TYPE 251A VOICE FREQUENCY REPEATER

A new exciting development from Budelman. Four of these new transistorized repeaters fit on a mounting shelf in only 1¾ inches of rack space. (Patent Pending)

Up to 20 db gain in both directions. Battery drain from 12, 24 or 48 volt battery is only 3.4 milliamps. Low price, high reliability. Send for data sheets today.

BUDELMAN

ELECTRONICS CORPORATION

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TELE-MUFF Jr.

The Head Set Ear Cushion
Designed Especially for Switchboard Operators

"TELEPHONE COMPANIES"
May now purchase
TELE-MUFF Jrs.
For their Operators, along with other stock items, from JOBBERS Listed As Distributors of Telephone Supplies on pages 49-50 of Telephony's 1959 Directory

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"AT TIMBER TREATING PLANTS"
Of poles, crossarms, and preservative treatments. Analysis of wood preservatives. Consultation and specification writing.
A. W. WILLIAMS INSPECTION CO., INC.
MOBILE, ALABAMA
New York • St. Louis • Portland
Inspectors stationed throughout the U.S.A.

POLES
CREOSOTED SOUTHERN YELLOW PINE
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"Truck Delivery Our Specialty"
Baker Wood Division, D. B. Frampton & Company
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"from the Nation's Largest Plant"
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POLES • CROSSARMS
RAIL or TRUCK DELIVERY
Pressure-treated to your specifications. 16 sales offices, 34 plants serving you. See Yellow Pages, write or call Pittsburgh EXpress 1-3300.
C-10
KOPPERS COMPANY, INC.
Wood Preserving Division
757 Koppers Bldg., Pittsburgh 19, Pa.

POLES

B. J. Carney & Co., 100 N. 7th St., Minneapolis, Minn.—Western red cedar poles. Pentrex Butt Treated or Plain.

Cascade Pole Co., P.O. Box 743, Tacoma, Wash. — Creosoted Douglas Fir and Cedar Poles.

C. M. Christiansen Co. — Northern White Cedar Poles. Pentachlorophenol treated. Plant and Yards, Phelps, Wis.

Eppinger & Russell Co., 80—8th Avenue, New York 11, N. Y.—Creosoted Poles and Cross Arms. Plants: Jacksonville, Fla., Norfolk, Va., Eddington, Pa.

International Creosoting and Construction Co., Galveston, Texas.—Creosoted Southern Yellow Pine Poles. Plants Beaumont and Texarkana, Texas.

International Paper Co., Wood Preserving Division — 926 Grand Avenue, Kansas City, Missouri—"LONG-BELL" pressure-treated Southern Pine and Douglas Fir Poles—Creosote or Penta.

Piedmont Wood Preserving Company —Creosoted and Creosote-Penta Treated Pine Poles. Plant, Augusta, Georgia. Yards, Virginia, West Virginia and Connecticut. Address inquiries to Box 1662, Spartanburg, S. C.

Texas Creosoting Company—512 Main Street, Orange, Texas—Creosoted Southern Yellow Pine and Douglas Fir Poles. Can also treat with "Penta."

pervisor on Jan. 2, 1951, the post which she holds currently.

Mr. Addington began his association with the Berry company on Sept. 18, 1935, as salesman in the Florida division. He served in sales capacities throughout the company's operations until 1939, when he was named assistant to the mid-eastern division manager, with headquarters in Bristol, Tenn. In 1941, he was appointed mid-eastern division manager, the position he holds today.

The 25-Year Club was founded on Dec. 6, 1957, and today has 16 members. Newly elected officers include general manager W. A. Steuer, president; southern territory manager J. P. White, vice president; and Agnes Herbst of the general office, secretary.

Pointing Up Contrast

"Communism is the exploitation of the strong by the weak. In communism, inequality springs from placing mediocrity on a level with excellence."—PROUDHON.

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SPLICING - CABLE PLOWING
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World-Wide

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CABLE SPLICER—20 years experience qualified in lead, plastic and buried cable, all types of splice cases. Prefer permanent work with company in Louisiana or Texas. References. Write Box No. 4481, c/o TELEPHONY.

ACCOUNTANT-OFFICE MANAGER—11 years experience. Wish to re-enter telephone business after two years of private business. Experience consists of managerial duties. Prefer Class A company. 34 year old veteran. Résumé available. Write Box No. 4482, c/o TELEPHONY.

HELP WANTED

CABLE SPLICERS, Station Installers, Equipment Installers, Linemen. Experienced men needed. Steady work, good pay. Henkels & McCoy, 1800 Johnson St., Elkhart, Indiana, or 6100 N. 20th St., Philadelphia, Pa.

EQUIPMENT INSTALLERS
Qualifications—Foreman
Steady Work—Eastern U.S.A.
Write Box No. 4471,
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Immediate Openings For:
Thoroughly Experienced Engineers in Various Project Support Activities in Home Office Staff Group

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Carrier experience combined with thorough knowledge of transmission criteria. Must be willing to relocate after initial home office assignment.

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Heavy experience requirement for supervision of projects at various missile bases.

- **LIBERAL EMPLOYEE BENEFITS** including excellent retirement program. These positions offer unusual opportunities in a new division of a long established company. Send complete resume of past experience

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OR MR. E. T. MACULAK

Advanced Communications Engineering

A DIVISION OF
COOK ELECTRIC COMPANY
CHICAGO, ILLINOIS

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Washington 23, D. C.

HELP WANTED

AMBITIOUS MEN qualified as Station Installers, Equipment Installers, Cable Splicers, Linemen. Work in Midwest. Harris-McBurney Company, Inc., P.O. Box 267, Jackson, Mich.

SWITCHMAN — needed by rapidly expanding Independent company. Interested, fully qualified applicants write to Personnel Director, Southern Nevada Telephone Co., Box 1190, Las Vegas, Nev. Give complete résumé and details of personal and professional qualifications in first letter.

BOOKKEEPER FOR CLASS A REA BORROWER with 5,200 subscribers located in north central Missouri. Prefer knowledge of REA and FCC method, but not essential. Contact—T. L. Selmon, General Manager, Chariton Valley Telephone Corp., Bucklin, Mo. Telephone OW 5-4775.

REGULATORY COMMISSION HAS OPENING for experienced telephone engineer with general knowledge of all phases of telephone operation. Regulatory experience not necessary. Merit system, social security and state retirement. Salary based on experience. Location Pacific Northwest. Write Box No. 4479, c/o TELEPHONY.

RAPIDLY EXPANDING INDEPENDENT company in southwest is seeking an experienced Traffic Training and Service Observation Supervisor. Experience should be recent and on a responsible level. Applicant should be capable of planning, organizing and supervising entire program. Salary commensurate with ability and position. Direct inquiries to Personnel Director, Southern Nevada Telephone Co., Box 1190, Las Vegas, Nev.

WE NEED — NOW: Qualified men to work with telephone company serving large Air Force Base and Heavy Radar Site, good wages, steady work, paid vacations, paid sick leave, fringe benefits. If you have specialist training in one, or more, of the following fields, and are interested in making a change: Central Office Equipment; SAGE Equipment; Key Equipment; Carrier Equipment; Toll Terminal Equipment; please contact Mr. Paul A. Froemming, Mgr., Souris River Telephone, 405 Third Ave., S.E., Minot, N. D.

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Telephone-Installation
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Req: 8 years wire engineering and/or installation/splicing
Write: Employment Manager
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1250 KINNEAR ROAD **COLUMBUS 21, OHIO**
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VF REPEATERS (dry line) *($500 value)* **$99.50**

Intermediate or End-Used as 21 or 22 Type

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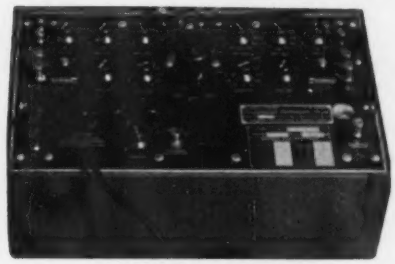
Every sale has lead to reorders



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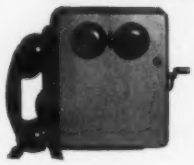
12 to 18 DB gain
(2 or 4 wire or both)
115-230 VAC or 12 VDC building-out network & protection built-in, weatherproof wood case removable for 19" rack mtg. Brand new...$99.50
Good used... 75.00

manual loaned free or shipped on approval

Brand New $12.50 each in std. package of 8
Kellogg #5812 MX



5812 MX

5 bar, 1600 ohm, anti-sidetone circuit. Complete with F27 handset, coiled cord. Oak cabinet, painted dull green. New and perfect—original factory pack.

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Complete Automatic Electric Co. system consisting of 800 line switches and 800 line finders.

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PBX, KELLOGG, MANUAL WIRED FOR 50 LINES, 10 cords and 10 trunks. Equipped with 30 lines, 7 cords and 3 trunks. Excellent condition. Make offer. Empire Telephone Corp., Prattsburg, N. Y. 607+LA 2-4110.

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CABLE SPLICING TOOLS & SUPPLIES
PROMPT DELIVERY FROM STOCK
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TELEPHONES—all types—any condition, candlesticks, wall sets, etc. Write advising quantities available. Our trucks will pick up. Reply to Box No. 3952, c/o TELEPHONY.

INTERESTED IN PURCHASING TELEPHONE COMPANY. Write Box No. 4458, c/o TELEPHONY.

WANTED ALL MAKES OLD TELEPHONES—our truck will pick up and pay you Cash on the spot. Telephone Co., Turtle Lake, Wis.

WANTED TO BUY
TELEPHONES — Any condition. Desk stands, wall sets, etc. Advise quantity available.
Write Box No. 4438, c/o TELEPHONY

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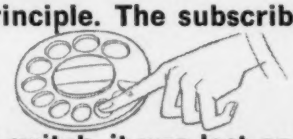
As millions of telephones were put into service, the problem compounded itself. The advent of automatic dial systems raised a new problem.

The decimal system, basis of the dial system, placed physical limitations on switchboard size and capacity. This demanded a network concept of interrelated switchboards in heavily populated areas.

Originally, dial systems were designed on the Direct Dial principle. The subscriber actually operated the switching equipment with each dial pull.



Since the dialed digit was transformed into energy to operate a switch, it was lost once it had performed its function. This did not work in complex networks.

The solution to network switching was common control. With common control switching, the digits were fed into a memory device, recognized as a complete number and translated into pulsed orders upon the equipment. Simultaneously, the need arose for greater switching capacity, efficiency, flexibility, and compactness. These requirements were met with Crossbar.

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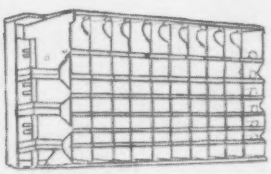

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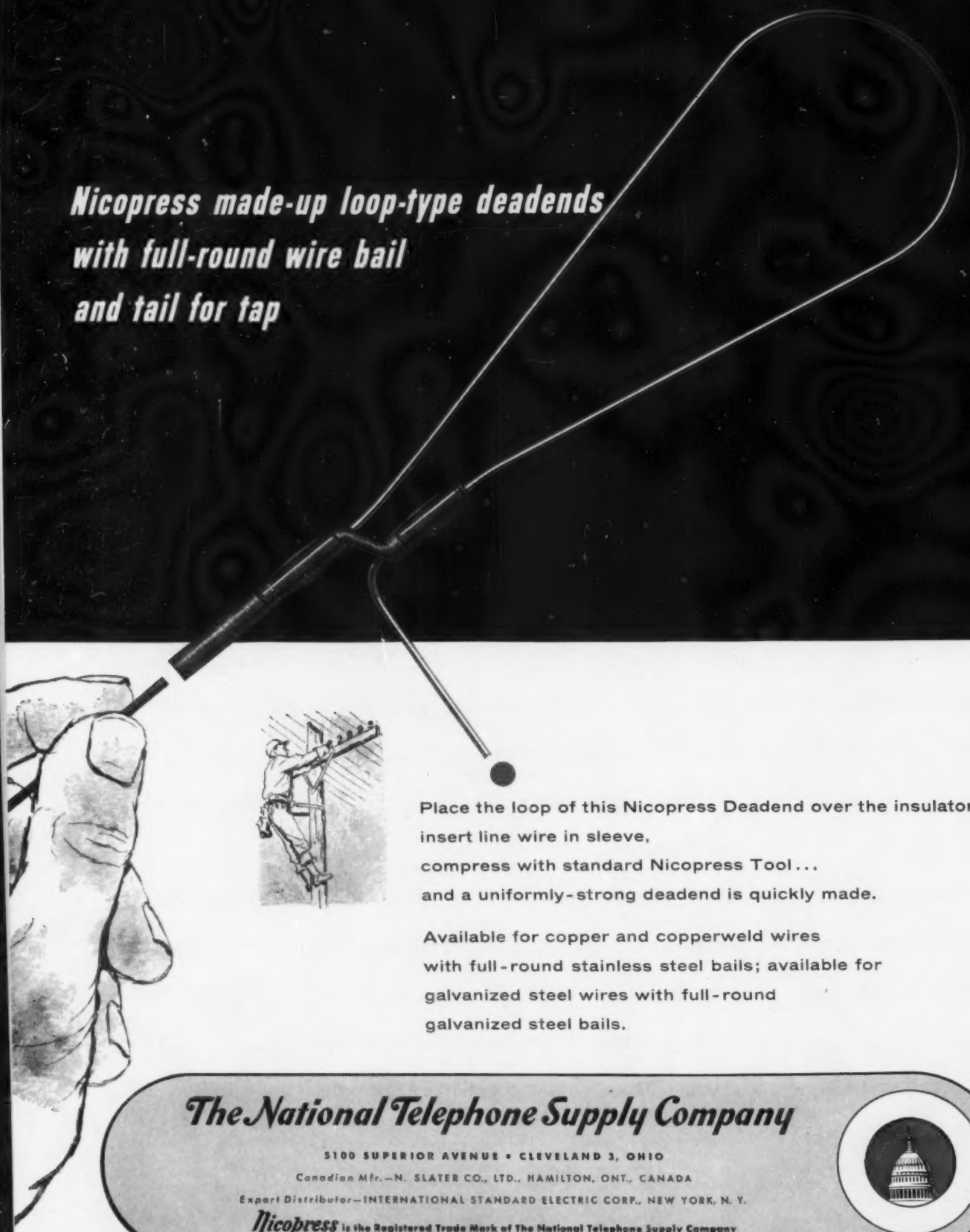

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